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SWANAGE

ITS HISTORY,
RESOURCES AS AN INVIGORATING HEALTH RESORT,
BOTANY, AND GEOLOGY.

LONDON:
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1891.

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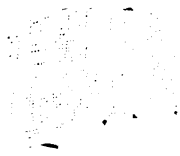
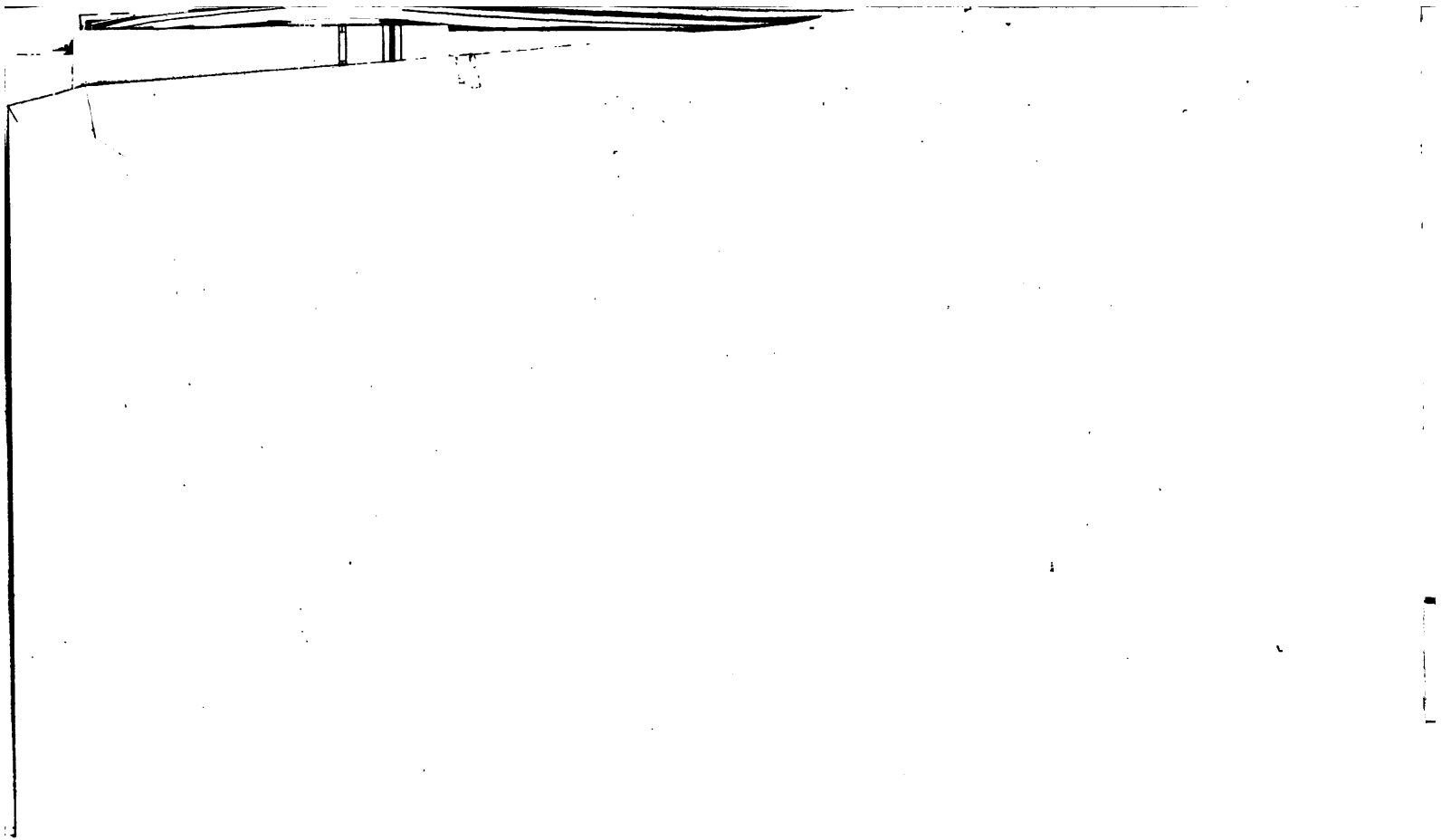
SWANAGE FROM THE BATHING GROUND.

SWANAGE.

(ISLE OF PURBECK.)

SWANAGE FROM THE BATHING GROUND.





SWANAGE

(ISLE OF PURBECK)

Its History, Resources as an Invigorating Health Resort, Botany, and Geology

EDITED BY JOHN BRAYE

THIRD EDITION

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SWANAGE AND BATHING GROUND FROM THE NORTH.

INTRODUCTION.

SWANAGE, according to popular tradition, derives its name from a swannery which once existed in the neighbourhood. In historic times it has borne corrupted names having similar sound; our own theory, however, is that the name has a different origin. In Heraldry, the Swan is—in addition to being the symbol of dignity, grace, and power—the emblem of purity. In some of the mystical religions of the East it is an object of adoration.

If the ancient residents of the Isle of Purbeck fixed on the name of Swanage to emphasize the two great natural elements found here—pure air and water—the name is a happy one; and as true to-day as thousands of years ago, when the piratical Scandinavians raided along this coast, and, for aught we know to the contrary, carried off some of the beautiful Purbeck marble to embellish their pagan shrines in the far-distant "land of the midnight sun," before the time when Remus and Romulus had pitched their tents on the banks of the Tiber.

In all ages and countries the instinct of man has led him to seek health-spots for his recreative and spare moments from labour, and if he can combine both so much the better.

There are two things a savage tries to avoid when settling on a new ground. These are—a rival to either his sunshine or water supply. Probably to this instinct we owe the spreading of the human race over the whole earth, as each new-comer endeavoured to go higher up the stream to prevent his neighbour fouling his own water supply. Both of the savage's ideas of life can be enjoyed at Swanage for many years to come, as it will be easy to build there without fear of having the sunshine cut off; and the water, which is in sufficient quantity to supply fifty times the present population, springs from the purest source, deep down in the

greensand, beyond the reach or fear of pollution. What is below the surface of Swanage has been dealt with in another portion of this book by Mr. Woodward, a well-known expert on the subject, and from his graphic pages the reader will find that of all spots on our varied shores there is no other so interesting to the geologist.

Another well-known expert, Dr. Forbes Winslow, gives us some account of the medicinal effects of Swanage on some of the most troublesome maladies man is subject to. The illustrations speak for themselves, and may assist those in the position of the Bride in Tennyson's poem, who asks:—

"'Whither, oh whither, love, shall we go
Through a score of sweet little summers or so?'
The sweet little wife of the singer said,
On the day that followed the day she was wed.
'Whither, oh whither, love, shall we go?'"

Swanage is what may be called a "family place," where wives and daughters may safely be sent without being exposed to the extravagant vulgarities of many watering places, or the demoralizing atmosphere of the aristocratic *roués* and loafers, who delight in corrupting all brought within their coils, whether city dame, or frivolous and unsophisticated rural *coquette*.

English watering places are a good index to proclaim the man. If you are told the watering places he voluntarily visits, you have little difficulty in taking the measure of his character.

All watering places, whether on the coast or inland, are ostensibly health resorts, though few of them started into life as such. Some have grown up round military stations, as Southsea and Dover; many are overgrown fishing villages; not a few are the creation of powerful aristocratic landowners, like Eastbourne; while a few are indebted to royalty for their start in life: one such is Brighton. The founders of this town which has given pleasure to millions of people—deserve to rank with the founders of dynasties. Many have attempted to account for the prosperity of Brighton, and have attributed other causes than its foundation by royalty.

Nature did not adorn it in a lavish manner. Trees, thought indispensable by some of her rivals, are few and far between, but abundance of sunshine and a vitalizing climate make amends for her other shortcomings. The exhilarating and buoyant feelings of

most men, with money in their pockets, when walking on the King's Road, is something to be remembered and longed for, and hence the perpetual crowd and the secret of Brighton's success.

Its native population—many of them descendants of settlers during the short-lived and gay court of George IV.—are lively and light-hearted, and outwardly display much religious feeling; charlatans and fanatics are constantly seeking audiences amongst them, generally with the success they deserve; politically, as becomes the descendants of their ancestors, they are slightly unstable; but in these days this counts for little.

The peculiarities of the founders of a place indelibly fix their stamp on the manners and customs of the people, and mould them for ages. This is particularly noticeable in the beautiful city of Bath, which was two thousand years ago to the then capital of the Roman world what Brighton is to-day to the still more powerful empire; for it is written on volumes of stone in the far-famed city of Bath, that the cream of Roman society annually visited the famous health resort then known as Aquæ-solis. We have only to visit the excavations of recent years at Bath and to see the splendid masonry of mineral baths, which are now to be utilized for their original purposes after a lapse of twenty centuries, to feel humiliated with ourselves as a nation that our advance in the higher grades of civilization has been so slow.

The question may be asked, How did the Romans reach Bath from the Imperial City? It is not likely that the whole of them journeyed overland through Gaul. Whether they came by sea or not, the chances are that they would strike the coast of Britain on the south-west to reach Bath, and there seems no doubt that Swanage had a considerable portion of the traffic. The roads inland, the nearness from point to point, and the configuration of the county—all seem to favour this theory. We are aware that most writers favour the idea that Seaton, lower down the Channel, was the point which the Romans used for reaching their inland pleasure resort. Probably this arose from the fact that one of their famous military roads, known as the Fosse-way, started from Seaton, passing through Ilchester, a strongly fortified station, and on to Bath. But there were more than one of these roads leading from the Roman city of Bath to the southern coast. These Roman roads are easily traced, and may be taken as models by modern road-makers who are engaged in laying out new towns.

Some excavations at Radstock a few years ago showed the construction of the Ilchester Fosse-way to have been made as follows :—

"1. Pavimentum, or foundation, fine earth, hard-beaten in.

"2. Stratumen, or bed of the road, composed of large stones, sometimes mixed with mortar.

"3. Ruderatio, or small stones, well mixed with mortar.

"4. Nucleus, formed by mixing lime, chalk, pounded brick or tile; or gravel, sand, and lime mixed with clay.

"5. Upon this was laid the surface of the paved road technically called the *summum dorsum.*"

Near this village of Radstock, which is about twelve miles south-west of Bath, a branch road breaks off from the main Ilchester Fosse-way, striking south-east to the Forest of Selwood, crossing the river Frome (this is not the Frome which enters Poole Harbour in the district of Swanage, but the one which finds its way to the Bristol Channel by joining the Avon). This is probably the road which would be used by the Roman travellers passing through Wareham and on to the sea at Swanage Bay. Whether we are right in our conjecture that in Roman times there was great intercourse between Swanage and Bath, it is now well established that some centuries later, in 520, a great battle was fought near Wimborne at a place then known as Mons Badicus, now identified as Badbury Rings. But for thirteen hundred years historians credited the famous siege of Mons Badicus with some hills a short distance from Bath. Although the ancient Britons made such a splendid stand at Badbury Rings, against the wild hordes of Saxon agricultural colonists, they soon overran the old Roman towns and settlements in the West of England, driving out or starving out the inhabitants, preferring themselves the rough life of the open country. Opinions may differ about the Saxon occupation; but there is no doubt the Saxons found England with fine cities and numerous main roads, and left it full of villages and lanes, and also delayed the higher civilization by a thousand years. We hope to see the former connection between these inland towns and Swanage revived again in our more peaceable days. There is another reason for advancing the connection between the famous inland Roman city and Swanage—that is, the quarry interest. Having an intimate acquaintance with the famous Bath stone quarries in the hills surrounding the city, we are struck by the

resemblance of the men employed there to those similarly engaged on the Purbeck hills around Swanage.

The mode of working the quarries and the habits of the men in both places are strikingly alike. The builders of Swanage should, like the Roman builders of Bath, use up the native stone of the Purbeck hills. Though a little more costly to work, it would prove a good investment for posterity. Mr. J. H. Middleton, in his "Ancient Rome," writes: "The rapid growth and stability of Rome were very largely due to the richness of its site and immediate neighbourhood of a variety of excellent building material, including several kinds of stone and the different ingredients of the most durable concrete, cement, and mortar that have ever been produced." There is a stone largely used in the building of the Colosseum, and described by Vitruvius, which has a great resemblance to Purbeck stone. He says: "*Lapis Tiburtinus* is a pure carbonate of lime, very hard, of a beautiful creamy colour, which wreathes into a rich golden tint; it is a deposit from running water, and is found in a highly stratified state, with frequent cavities and fissures, lined with sbttllized f carbonate of lime. In it are frequently embedded roisyc stick and leaves; it is an excellent weather stone, but is easily calcined by fire, and when burnt produces most excellent lime. If laid on its natural bed it is very stony, but if set upright its crystalline beds are a great scource of weakness, and it splits into *laminæ* from end to end." As to its durability the Colosseum is a substantial witness. Rome in Vitruvius' day—which was in the reign of Augustus—used bricks in some of her meaner buildings, but it was the boast of Augustus that he found Rome built of bricks and left it of marble. There is no doubt that he did a great deal towards popularizing this expensive material in the erection of public buildings, and by inducing the nobles to use it in their palaces.

Swanage is happily placed with regard to good stone and marble, the Purbeck stone having been used for ages in paving the streets of London, and by the Government in military works at Portsmouth, Dover, and elsewhere. Certainly this should be sufficient guarantee of its durability and suitability for building a substantial town for the future generations. The minor question of cost should not be an insurmountable obstacle. Why should all health resorts and watering places be built to suit the

modern craze for show and cheapness and to suit the taste of the million? If a gentleman wants a coat he goes to Savile Row or Bond Street, and has to pay accordingly; but if a working-man requires a similar article he finds his way to Moses or Solomon of Houndsditch; both are suited according to their taste and means. So it is with everything else in civilized life; and why should it not be in the matter of building a house? Swanage is geographically situated to become a rich man's place of residence, backed up by the western counties, long the home of aristocratic England, within easy reach of the fashionable inland towns of Bath, Leamington, Clifton, and Cheltenham, and the great centres of population, Bristol and Birmingham. These places, as seen on the map, are within an easy railway journey of Swanage, while many historic spots are only a day's drive from it.

Much is said in the present day about sanitary buildings, but little of the foolish vagaries of those inflated gentlemen the architects, who have managed to spoil many of our pleasure places by putting up shoddy buildings of lath and plaster, and ticketing them with fantastic names such as "Bungalow," "Bijou," etc. Such dwellings are well suited to stand a few years in the tropics; but utterly worthless for a decent watering place, and the builders who erect them should be prosecuted for tempting frivolous and thoughtless pleasure-seekers to risk their lives in them.

Swanage is doubly blessed in having for its patron Mr. George Burt, who is a considerable owner of land in the most healthy part of the town. His half-century of experience as a member of the famous firm of John Mowlem, contractors, builders, and road-makers, makes him a host in himself, outweighing a good-sized army of sanitarians of the genera medical, architectural, and "universal reformers."

The founder and builder of a town should be a despot: all cities and towns that have been successful in history have had something of the sort. Bath in the last century had its triumvirate in Allen, Nash, and Wood; Brighton its pair in George IV. and Dr. Russell. Eastbourne to-day has the Duke of Devonshire; while the neighbouring town of Bournemouth has two kings who reign over the ground rents, and are a terror to "jerry" builders and evildoers generally. The despot should be

an enthusiast and a patriot to his district, or he will not succeed in building up a permanent work which shall send down his name to posterity. We cannot conceive a more glorious monument to a man than that of founding a health-giving town. To do this satisfactorily, it is necessary to look a long distance ahead. The honour must be posthumous and the benefits reaped by others than the sower.

If our readers will study the map of England bound up with "Bradshaw," they will see how easy it is to get to Swanage, and most convenient for those living at Bristol, Bath, Birmingham, Cheltenham, and many of the great towns northward, *viâ* Temple Combe and Broadstone Junction by the Midland Railway. The London and South-Western, after long neglect, are about to make amends by constructing a short line across Poole Harbour, so that Swanage will be brought within three hours of London *viâ* Bournemouth. This new line will be of great benefit to the two towns, which are growing in peaceful rivalry. It is remarkable that although Bournemouth and Swanage are—as the crow flies—only about seven miles apart the climate is entirely opposite: the climate of Bournemouth being as suitable as Madeira for certain diseases. On the other hand Swanage is as exhilarating as the Swiss Alps, and in springtime as balmy and pleasant to dwell in as the Isle of Wight. Like Bournemouth, Swanage has no fashionable esplanade, so detestable to quiet people and invalids Furnished apartments and houses are plentiful, but hotel accommodation is meagre. At Bournemouth there is a plethora of hotels. If the energetic Mr. Doré, of the Imperial and Bellevue Hotels, would transfer some of his energy to Swanage, and give us a similar hotel as luxurious and comfortable as his Imperial at Bournemouth, he would be a benefactor to the place.

Her Royal Highness the Princess of Wales, accompanied by her daughter and suite, landed at Swanage in August this year. Having engaged the ordinary public carriages found near the pier, they visited several of the places mentioned and illustrated in this book.

SWANAGE PAST AND PRESENT.

PRIOR to the invasion of Britain by the Romans, in the earliest period noticed by history, Dorsetshire was inhabited by a native tribe whom Ptolemy calls *Durotriges* or *Morini*, who are believed to have been a Belgic race. These names were derived from British roots, and signify "dwellers on the sea-shore." By the Saxons, Dorset was styled *Dor Satta*, which has a similar meaning, implying "dwellers by the water."

It is a strange circumstance that, although the county has passed through so many changes in its inhabitants, it still retains in its name the Celtic root-word *dwr*, meaning water.

Upon the conquest of South Britain by the Romans, Dorsetshire was included in the division called *Britannia prima*. Under the Saxons it was included in the kingdom of Wessex, and after the West Saxon princes acquired the sovereignty of England they occasionally resided in this county.

Swanage—in the "Saxon Chronicle" styled *Spanapic*, *Swanawic*, and by Asser *Menevensis*, *Suanavine*, and *Gnavewic*, and named in Doomsday *Swanwic*—is situated at the south-east extremity of this county and island, on a little bay, to which it gives name, five miles south-east from the decayed borough of Corfe Castle, and two from Langton Matravers. Swanage was anciently included in Worth Matravers, to which it was a chapelry, though now a distinct parish, which separation took place about the year 1500. The earliest and principal historical event on record connected with it is the destruction, by a violent storm, in 877, of a Danish fleet of a hundred and twenty sail on Peverel Point, at the south-eastern entrance of the bay on which the town stands, when advancing to the relief of the Danish troops in Exeter. Authors have assigned different places where this accident may have happened. Bishop Gibson, in his explication of the names of places at the end of the

LA BELLE VUE AND DURLSTON BAY.

"Saxon Chronicle," places it in Hampshire, near Lichfield, where is an inland village called *Swanwich*. In this he has been followed, says Hutchins, by most succeeding historians and antiquaries, without ever reflecting that this last place, besides being ten miles distant from the seaside, lies north-east of Wareham, and totally out of the course of the Danish fleet: whereas the departure of this fleet from Wareham, and their destination to Exeter, which obliged them to double Peverel Point, and go round the isles of Purbeck and Portland, in order to sail westward, all conspire to fix it here. On the beach is a granite column commemorating this event; it bears on its summit the curious embellishment of five cannon-balls, the meaning of which is not discernible.

Asser makes another such accident as this to have followed a sea-fight between Alfred's fleet and the Danes coming to relieve Exeter in the same year. But a note in the Cotton MS. observes, that the first of the relations was inserted in the MS. from some other, probably Matthew of Westminster, who tells the same story. The number of the Danish vessels lost is exactly the same in both the calamities; though the names of the places, *Gnaverwic* or *Sua-navine*, seem different. But these two names in Asserius, and *Suanawic* of the "Saxon Chronicle," mean the same place, for in all old MSS. *G* and *S* may be easily mistaken for one another, and so may *E* and *C*; and there is often no distinguishing in MSS. between *u* and *n* when put together, as in *Gnaveunic* and *Suana-vine*, but by the sense, which fails in names of places. Mr. Carte, therefore, justly fixes this sea engagement at Swanwich, near Peverel Point—a place, he says, which deserves to be famous for the first considerable naval victory of the English. Besides the "Saxon Chronicle," Lambarde in his Dictionary expressly says that the Danish fleet perished in a storm here. Perhaps this may have given name to the place—*wic* or *wice* in Saxon signifying a curve or bending or reach of a shore or river, and the name of the Danish admiral who perished here may have been *Suene*. In Doomsday Book it was surveyed in two small parcels: *Swanwic* was held by Walter, of the wife of Hugh the son of Grip; *Sonwic* by the Countess of Bologne, of the king. Then the principal manor seems to have been that which was afterwards called *Carrants Court*.

In the thirty-first year of Henry II. the serving men of Roger de Poles de Sandwich answered half a mark for wrongfully seizing a

royal fish. In the fifty-sixth of Henry III. William de Welle held one fee in Swanwich, and in twenty-second Edward I. Edward Earl of March held this manor. In the twenty-second of Richard II. and third of Henry VI. the Earls of March held one fee here and another in Purbeck. During the twenty years of Edward III. the tenants of the lands of John Possont and Henry Talbot were charged for half a small fee here, which John Possont and Henry Talbot formerly held. In the twenty-fifth of the same reign *William de Eyre* held lands here, also Edith, wife of William Wyke, his daughter and heir. In the fifth of Richard II. William Mathan, who died in that year, held sixty acres of land in Swanage, besides lands in Godlingeston, Woolgareth, and fifty acres of the Abbot of Tewkesbury, Orchard in Purbeck, and Winterborn Manreward, of Thomas Manreward. In the reign of Edward IV. William Carent held at his death one messuage, one hundred and twelve acres of land, in Swanage, of Nicholas Latimer; and in 1533 Baldwin Malet died at a good old age in the Manor of *Swanwich*. In the tenth of Elizabeth there is another entry to the effect that four messuages, one hundred and nine acres of land, and twenty-two shillings rent of the free tenants in Swanwich, Ulwel, Horston, East Hide, and Moulcham, were held at his death by William Perrye, of the queen, as of her duchy of Somerset.

How long the property continued in the family of the Carrants does not appear. The family from whence this manor seems to have taken its name were seated at Toomer, in Somerset; but had several other concerns in the county of Dorset.

In 1603, John Bond, of Lutton, bought this manor in fee of Robert More, of Hawkechurch, having in 1587 purchased three lives on it. Hence it descended to Onesiphorus Bond, of Wareham, his fourth son, who had it in 1640, and in 1664 sold it for £340 to Thomas Chapman, of Swanwich, who already held nineteen acres of land, parcel of Carrant Court farm, the fee simple of which descended to him from his father and grandfather. Afterwards it was sold in more parcels to the Roses of Rempston, or Swanwich, who sold their part in the beginning of Anne's reign to Sir William Phippard. Afterwards it came to the Mompessons, of Langton Matravers, who sold it to the Serrels.

Swanage is particularly noted for the quarries in its district. Those in the Isle of Purbeck are very valuable; they are located

in three parishes, Swanage, Langston, and Worthe, and cover an area exceeding twelve miles. Many of the inhabitants are employed in digging and tooling the stone which is raised from pits, some twenty, others forty, feet deep. These pits are not open to the top, but are undermined and underbuilt; the hills to the south and west of Swanage being penetrated with numerous shafts and galleries. The work of the quarries is carried on under the rules and customs of a curious trades guild of a mediæval type, by which none but the sons and sons-in-law of the quarrymen are allowed to work, and not then until they have served seven years. They meet to transact their annual business on Shrove Tuesday at Corfe Castle. Formerly they kicked a football from Langton through Corfe, over the heath to Owre; now the football is carried, and with it a pound of pepper for the Lord of the Manor—an acknowledgment of the right of way to Owre.

Large quantities of durable building stone are obtained from the quarries in addition to the ornamental marbles. This stone is excellent for walling, floors, steps, and in particular for foot-pavements for towns; it is also used for tombstones and troughs. Another sort of stone is found here and used for pitching streets; and some of the thin stones on the tops of the quarries are used for covering buildings.

The Purbeck and Portland stone is said to have been first brought into use and reputation in the time of James I., when it was employed in the erection of the Banqueting House at Whitehall; but one constantly meets in old records with orders for Purbeck marble and stone. It was used for Westminster Abbey and for the construction of the Eleanor memorial crosses at Waltham-Cross and Charing Cross. Grants of loads of it were also frequently made to the heads of religious houses. After the Great Fire of London it was much used by Sir Christopher Wren, in the construction of different public edifices; and its beauty and durability have since procured for it a constant demand for similar purposes in various parts of the kingdom.

The Purbeck beds are alternating series of thin limestones, marls, and shales. They rest conformably upon the Portland beds, and pass gradually upwards in the more sandy deposits of the Wealden. They are chiefly of estuarine origin, with few marine interstratifications, and with the Wealden bear witness to a terrestrial episode in the British area, intervening between the marine

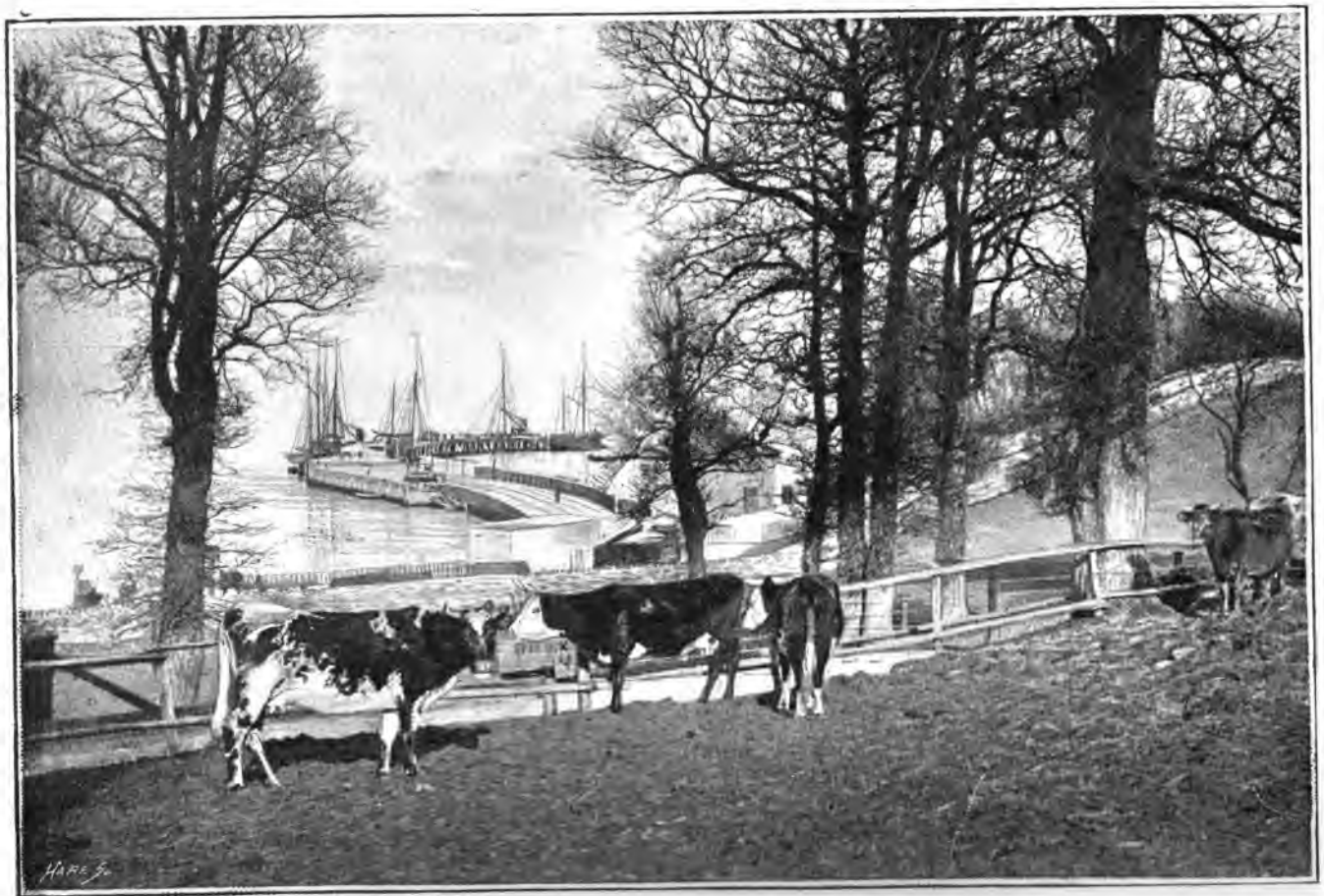
conditions, under which the oolites beneath and the cretaceans above were deposited.

The beds near Swanage are about three hundred and sixty feet in thickness, and are well exposed in the cliffs of Durlstone Bay and the numerous inlets farther westward. These beds have been considered capable of division into three groups—an upper, middle, and lower. At the base of the lower are three successive surface soils, locally known as "dirt-beds"—these are to be seen well exposed in the cliffs of Lulworth Cove. Scattered through the soil are numerous silicified stems of coniferous trees and cycads, and one peculiar fossil of this nature is known to the quarrymen as the "petrified bird's-nest;" it is the compressed stem, with the bases of the leaves of an extinct cycad, *Mantellia nidiformis*.

The middle Purbeck beds contain a particularly interesting series of fossil remains. Besides countless myriads of cyprides, which equally characterize the upper and lower divisions, there are also abundant remains of fishes and reptiles, and numerous traces of mammalia. Fossils of different fish, particularly bream, are found in the quarries, and among the bones discovered are large vertebræ and bones of the iguanodon and plesiosaurus, bones of large and small crocodiles and of various reptiles. Another interesting stratum in the middle Purbecks is the "cinder-bed," which is an accumulation of distorted oyster-shells—the exuviæ of old oyster-beds that were evidently affected by the small supply of salt water within their reach.

At Swanage is a white stone full of shells, which takes a polish and looks like alabaster; and at Downshay, and in its vicinity, was formerly dug marble of various colours, blue, red, spotted, and grey, but chiefly the last, which is a conglomeration of shells. In the northern part of Purbeck and in the vicinities of Wareham and Morden is found a stone of an iron colour called Firestone.

The Kimmeridge coal-shales have an almost unique antiquarian interest, from the fact that the harder and more even-textured varieties were the subject of an important local manufacture prior to the Roman invasion, which the Romans seem to have continued, for they employed it largely for ornamental purposes, particularly for bracelets, beads, and armlets; it was also much used by them for domestic purposes. The waste discs left by



THE PIER FROM THE SOUTH.

the turner have been found at Purbeck in large quantities, and from their imagined use as coins were long currently called "Kimmeridge coal money."

Owing to the development of other quarries and the change of fashion Purbeck marble is not so much in demand as formerly, but the quantity exported yearly was recently estimated at sixty thousand tons, and the extent of the annual excavations at an acre. At this rate the island will supply stone for the next two

PURBECK HOUSE.

thousand years. It is most durable, and is employed in St. Paul's Cathedral and many of the finest buildings in the Metropolis.

Most English towns have to confess an enormous debt of gratitude to local benefactors. Swanage looks to Mr. George Burt, of Purbeck House, who has developed and improved the town and its neighbourhood to such an extent that those who knew it fifteen years ago would scarcely recognize it, were it not for the ancient landmarks, which have been tenderly preserved in their entirety.

The town of Swanage consists of but one narrow, winding

street, which is undeniably picturesque. The cottages are quaint-looking, and built of the famous Purbeck stone; and some of them are said to be several hundred years old. They are sunk many feet below the level of the road, a person passing being able to reach the roof with slight exertion. From this old centre of the town streets of new houses of handsome appearance are branching out in various directions, and with their gardens and plantations give the appearance of a rising and prosperous seaside resort. An old feature of Swanage is about to succumb to modern improvement. Now that the town is a terminus and the stone is no longer sent by sea, the stone-yards along the quay have become obsolete, and there is talk of an esplanade to take their place, with gardens and ornamental buildings for the use of visitors, who come by the numerous pleasure steamers which ply between Swanage and various well-known towns.

In the centre of the old part of Swanage stands a cottage carefully fenced in, and surrounded by beautiful and choice shrubs, which flourish in great luxuriance. In the gable end of the cottage has been inserted a tablet, bearing an inscription to the effect that the Rev. John Wesley, the founder of the sect which bears his name, spent some time there as the guest of Mr. Burt's grandparents.

On the opposite side of the road stands Purbeck House. It occupies the site of an ancient monastery of the abbots or monks of Binden, and has an unrivalled view of the surrounding landscape

One of the most remarkable features of Swanage is the Parish Church. Much of the edifice is modern, though built on an ancient site. The tower, which is stated by tradition to have been erected before the birth of Christ, is the oldest building in the island, not excepting even Corfe Castle; for though composed of the same sort of stone, this has acquired a greater degree of nitrous incrustation than that has, and, like it, the mortar is almost petrified by the action of the atmosphere through such a length of time. It was probably once used as a fortress, as there is still a moat filled with water on the western side. Exceedingly massive, with walls of great thickness, it rises almost perpendicularly in five stages to the height of about eighty feet, and is entered on the outside from a flight of steps about twenty feet high. In Christian times there is a record of three churches having been added to it. The tower has a peal of eight bells, four of which are new, having

PURBECK HOUSE FROM THE RAILWAY STATION.

recently been placed there at the cost of Mr. George Burt to the memory of his late wife.

The present church, which is very interesting from an antiquarian point, is dedicated to the Virgin Mary. It is a large building, and consists of a chancel, body, a narrow north aisle almost equal with the chancel, and small south aisle. The body of the church is covered with lead, the rest with tile. The chancel is large, and is one-third of the length of the fabric. The north aisle belongs to Godlingston farm, the south to no particular place or person. On the east wall is a pedestal for an image; on the south a niche for holy water. Near it is an arch in the wall, and under it a narrow tomb of grey Purbeck marble, but without any inscription. This church seems to have been built at different times as the inhabitants increased. The rectory church at Swanage was anciently only a chapel of ease to Worth Matravers, and was included in the presentation for many years. It is now become a distinct parish and a representative church. When it became so is not quite certain, but probably about 1500. In the valuation for 1291 it is styled the Church of Worth and Swanage, as it was for two centuries after.

On a tombstone in the churchyard is the following epitaph :—

Near this Stone
lie the earthly Remains of
MR. THOMAS MANWELL
who
(unassisted by education)
by the strength of a superior genius, and
Nature for his guide,
broke thro' the barrier to literature, and
acquired a degree of knowledge which
might have rank'd him with
the first Philosophers of the Age;
but
being a child of Solitude, his retired
meditations were far dearer to him
than the acquirement of
Fame,
And if Charity, Humility, and Meekness,
with
Faith in a Redeemer be Christianity
he was a perfect Christian.
Obits. 4th Feby., 1822.
Anno Ætatis 70.

The above epitaph was written on one of Mr. Burt's maternal ancestors by Dr. Bell, Rector of Swanage from 1801 to 1808, when he was appointed to the Mastership of Sherburn College. Dr. Bell took great interest in the Manwell family, and assisted one of Mr. Burt's uncles—formerly a stonemason in Swanage—to become a master in St. James's Schools, Piccadilly.

Dr. Bell died at Cheltenham, January 27th, 1832, and was buried in Westminster Abbey (about half-way up the nave from the west door), the inscription on the tombstone being, "The Author of the Madras System of Education."

The bay having of late years come into repute as a health resort, several large buildings have been added, which greatly improve the general appearance. Among the principal are the Library, containing some thousand books, and the Royal Victoria Hotel, a spacious building sheltered in its different aspects from all winds, and containing hot and cold sea-water baths. The bay, though not large, is beautiful, and affords security for vessels of three hundred tons burthen, which can ride here steadily. Considerable improvements have taken place in the neighbourhood; and the mildness and salubrity of the air, possessing all the advantages of a southern climate, render the town peculiarly desirable as a winter residence.

The manufacture of straw-plait employs many of the women, and the chief occupation of the men is in working the quarries, though sailcloth and sacking are also made in and near Swanage. There are no ores of any kind found in the county, nor are there any mines of coal, the supply in this article coming either from Newcastle or Wales; the proportion between the Newcastle and the Welsh coal is as thirteen and a half bushels of the former to one ton of the latter.

There are two or three mineral springs in Swanage, but they have not hitherto been used for medicinal purposes, though probably not unknown to the Romans. There are also several Roman camps and barrows in the neighbourhood, and old coins have been found under the soil.

CHURCH LANDS.—The manor of the Dean and Chapter of Exeter—vulgarly called "Eight Holes," from the number of tenements contained in it—lies at the east end of Swanage. It anciently belonged to the Priory de Vasto or Wasto, and seems to be the same manor that at the Conquest belonged to the

Countess of Bologne, but was afterwards given to the Dean and Chapter of Exeter, as were Winterborn Monkton and Rockhampton. In the reign of Richard II. the lands of the priory here were rated at 14*s*. Swanwich manor was held at his death by John Syward of the king in chief. It was probably this manor, because that family were lessees or lords mesne of the manor under the Prior de Vasto, as they were of Winterborn Monkton. In the third year of Edward VI. eight cottages, etc., in Swanage were granted *inter alia* to Keylway, etc. Elizabeth also granted lands here to the Dean and Chapter of Exeter and their successors. This little manor has generally been leased out to several persons. In 1293 the lands of the Prior of Frampton here were rated at 9*s*. During the reign of Philip and Mary, Sir George de la Lind held a messuage and land in Swanage of the Prior of St. John of Jerusalem, as of his manor of Fryer-Magne.

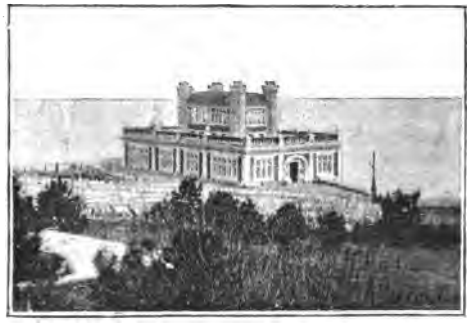
NORTH-WEST PART OF BAY.

ISLE OF PURBECK.

WAREHAM, lying west of Swanage, is a place of some interest from an historical point of view. It has been a fortified town since the days of the Danish invasion, as the area enclosed by its ramparts shows, but is now a place of less importance than formerly. It is situated between the Frome and the Piddle, whence it has derived its name —Saxon *Weartham*, "the dwelling on the land between two waters." A Wessex king is said to have been buried here, and in the struggles with the Danes it was frequently made their head-quarters; the adjoining streams of the Frome and Piddle, and its proximity to Poole Harbour, rendering it a convenient base for operations. This favourite landing-place of the Danes has, however, been long choked up. Wareham was brought very low by these invasions at the time of the Norman Conquest, but it revived again after this. As the key of the Isle of Purbeck, it again suffered from its position in the struggles between King Stephen and the Empress Maud. The friends of the latter first possessed themselves of it; then it was taken and burnt by the other party, and lastly was recovered after another siege. After these troubled times it entered on a quieter period, which lasted until the time of Charles I., when it was again disturbed, being taken and re-taken more than once. The townspeople declaring for the king, a parliamentary leader suggested the destruction of the town. This, however, was not done; but a fire broke out in the next century which nearly fulfilled his intentions. Only three churches remain of the eight which it is said to have formerly possessed, and of these but one is in regular use. This church is interesting; it stands on the site of the wooden chapel in which the body of Edward the Martyr lay for some time. The body of the church is modern, but some portions date from the time of Henry III., and the walls contain some inscribed stones, taken evidently from a

much older building. There is some trade in agricultural produce, and in fine potter's clay. Wareham is said to have been the birth-place of Horace Walpole, but there appears to be some doubt as to the authenticity of the report.

DURLSTON BAY.—To the south of Swanage lies Durlston Bay, with its fine section of the Purbeck beds. At the base is a singular seam, called the "dirt-bed," containing the remains of a fossil forest, which is exposed in several localities along the coast. Quarries are numerous hereabouts, the most noted among them being Dancing-ledge Quarry, named from a ledge of rock upon which the waves "dance." The contortions of the beds exposed in the cliffs are interesting to the geologist, and the scenery is often striking.

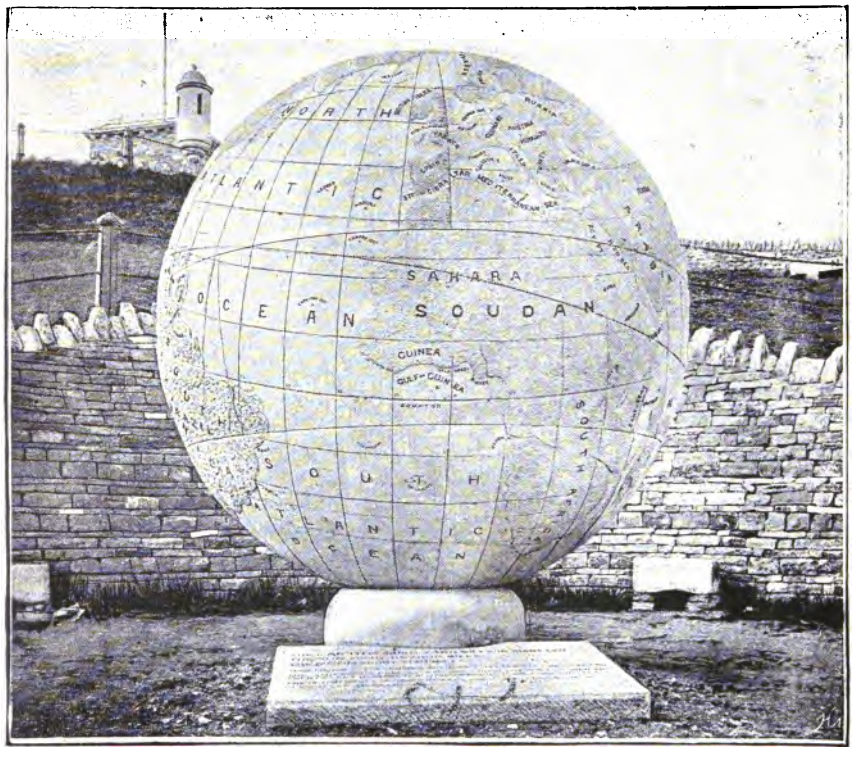


DURLSTON CASTLE.

On Durlston Head, at an elevation of about one hundred and fifty feet above the level of the sea, has been erected a large solid-looking structure, which has received the name of Durlston Castle. This has been built and is being fitted up as a restaurant at the expense of Mr. George Burt. Let into the south wall of this building is a sun-dial; and at a lower level are large slabs, on which are tabulated various statistics of universal interest and instruction, such as the convexity of the ocean, particulars of tides, etc. On an elevation below the Castle stands the great sight of Swanage—a Portland Stone globe, weighing forty tons and measuring ten feet in diameter, placed so as to represent the earth correctly poised. On it are shown the continents in slight relief, the oceans, and rivers; round the globe are placed stone benches in the proper positions at the eight points of the compass, which they

DURLSTON CASTLE AND THE LARGE GLOBE.

indicate, and with the direction clearly lettered upon them. Pleasure-seekers having commenced to chronicle their visit on the globe, a large slab has been placed in the wall close by, surmounted by this inscription: "Any persons anxious to write their names will please do so on this stone." Her Imperial Majesty the Empress Frederick, during her last visit to England, when



THE GLOBE, DURLSTON HEAD. 10 FEET DIAMETER, 40 TONS WEIGHT.

cruising round Purbeck, landed and paid a special visit to "The Globe."

From the Globe a path leads down towards the caves of Tilly Whim, and a tunnelled entrance has been blasted through the solid rock into one of them which opens into the sea. These caves are most striking and picturesque; they are said to have been much used by smugglers, a race of which this coast abounds in traditions and legends. In 1720 the mayor and inhabitants of

Poole petitioned the House of Commons, complaining of the decay of trade owing to smuggling. Apparently the first petition had no effect, for a second was presented two years later; and the Government, at last obliged to move in the matter, instituted proceedings which threw light on an immense and well-organized illegal traffic, which had been carried on successfully by the most respectable inhabitants in the district. These good people thereupon sent up counter-petitions from Poole, complaining that they were impoverished and their trade lessened "by prosecutions against such of the unhappy inhabitants as, through ignorance or inadvertence, bought goods which had not paid the duties." This petition was sympathetically considered by a committee to which it was referred, and the penalties were remitted. The result of this mildness was a murderous and audacious robbery of smuggled tea in 1747, seized in the first instance by the Customs, and re-captured by smugglers, when two Customs officers who had identified some of the ringleaders were murdered. This led to a vigorous attack on smugglers by the Government, in consequence of which six were hanged in the following year, and several others were subsequently executed. In later years a well-known transgressor was Captain Gulliver, who, it is said, attempted on his death-bed to keep out the Prince of Darkness by having all his windows and doors barred; but his efforts are reported to have been in vain, for an old retainer broke the news of his death to his friends in the significant words, "He has got 'un."

Tilly Whim is said to have been named after an eccentric character, a former owner called Tilly Whim.

From the caves of Tilly Whim and the coast near Durlston Point a tremendous sea may at times be seen; and it is difficult to imagine a greater contrast than between the sea on a calm bright day and when it is dashing in uncontrollable fury upon the rocks. Durlston Point presents a grand view in its peaceful beauty; but words fail to paint the majesty of its surroundings when roused by the frenzy of a gale, with spray cast two hundred feet into the sky.

The quarries continue to St. Aldhelm's Head, which is so conspicuous an object. This promontory can be seen from all the coast round for many miles. It takes its name from a saint, first abbot of Malmesbury and first bishop of Sherborne, a great scholar and a good man. The summit of the promontory rises to

TILLY WHIM AND DURLSTON HEAD.

a height of nearly one hundred and fifty yards above the water, and is crowned by an ancient chapel, where, in former days, a priest prayed for the mariner's safety as he trimmed a beacon-light. Its architecture is Norman, the stone roof being supported by a central pillar. The door is towards the north-west, and the one window, a mere slit, is in the south-east wall. During the summer months an evening service is conducted here by the Vicar of Worth. St. Aldhelm's Head is the most southerly point of this part of the Dorset coast, and the view is very fine and extensive; the mural escarpments of cream-coloured limestone adding greatly to the beauty of the surroundings. Near here lies the village of Worth Matravers, the principal feature of which is the parish church, recently restored by Lord Eldon. It is dedicated to St. Nicholas, and was formerly the mother church of Swanage. The architecture is chiefly Norman, the main portions of the tower and nave dating back to 1100; the chancel is of the Early English period. A few curious tombstones, decorated with crosses, have been preserved in the churchyard; but probably the most interesting among them will be found to be that of one Benjamin Jesty, of Downshay, "noted for having been the first person (known) that introduced the cow-pox by inoculation." He is said to have performed the operation with a stocking-needle, and commenced his experiments, in 1774, on his wife and two sons, "from his strength of mind."

The solid Portland stone which guards the coast like a natural breakwater has been breached here and there, forming a gateway to the sheltered coves within. Among the most important of these, we find Lulworth Cove, one of the most picturesque spots round Swanage. There is a castle here, pleasantly situated. The structure is comparatively modern, dating only from 1600; but a castle, however, existed here in the days of Stephen, and older materials, chiefly from Binden Abbey, are worked up in the present structure. It is a cube in plan, with corner towers, and can be reckoned among the most successful architectural efforts of the period. During the Civil War it was for a time garrisoned for the king, but afterwards seized by the parliamentary party. Royalty has frequently honoured Lulworth Castle with a visit, commencing with James I., and it was placed at the disposal of Charles X. of France, who occupied it for a short time. It has been for more than two centuries the property of a Roman

Catholic family named Weld, one of whom was created a cardinal by Pius VIII. The famous Mrs. Fitzherbert, who attracted the attention of the "First Gentleman of Europe," was the widow of a son of the family.

About a mile north from Swanage lies Godlingston, anciently a manor and hamlet, now a farm; it lies under the north hill, a little west of Whitcliff, and is said to be one of the oldest remains of domestic architecture in Purbeck. Moulham, anciently the residence and estate of the Moulhams, but now only a parcel of grounds that make part of the Godlingston farm, lies to the north-east. In Doomsday Book, Durandus, the king's carpenter, held "Moleham," also a virgate of land in Alfumstone. Mr. Coker says the Conqueror gave it to his carpenter Durand, to be held by the service that he should repair the timber work of the great tower of Corfe Castle, and cleanse the gutters as often as need required, for which he quotes Doomsday Book, but it is not to be found there.

There are many hamlets of slight importance round Swanage that have been connected in some way with the history of Dorset. Of these the most important are Herston, a tything of about fifty houses, lying at the west end of Swanage; Norbrook, a manor farm lying in an opposite direction; Ulwell, anciently a manor, now a hamlet of ten or twelve houses, which lies in a break of the north hill in Whitcliff tything, and a little west of Whitcliff, partly belongs to Studland. This pretty old-world village, with its ancient millpond, probably derives it name from the well of the exhaustless stream which has for centuries past poured volumes of the purest water unheeded into the sea. Whitcliff, which is now a farm, was once a manor, and derived its name from the chalky cliff to the east of it. It lies near Swanage Bay, a little south-west of Handfast Point, and is said to have been at one time a favourite residence of King John.

STUDLAND.—This bay lies to the north of Swanage, in the extremity of the Isle of Purbeck, under the slopes of Ballard Down, at the head of a small chine leading down to the shore. In Doomsday Book "Stollant" was held by Haimo, of the Earl of Moriton. Here were at that time thirty-two saltpits. The difference of this name from the present, Hutchins says, may be owing to the error of the Norman scribe. On Studland Common,

which borders on the south side of Poole Bay, are many ancient barrows, some of them large and oblong, most of them round and rude. In an old map by Tuswell four of them are taken notice of: Addingstone, Blackdown, Rycroft, and Puketon. Addingstone is the most northerly, and seems to be the same now called Agglestone or "stone barrow," from a vast stone on it. The name Agglestone seems to be derived from a Saxon word meaning "holy stone," which Hutchins says is expressive of its ancient superstitious use, for there is little doubt that it was a rock idol or deity in the British age. The county people call it the "Devil's Nightcap," and have a romantic tradition that the devil was sitting on one of the Needles looking about him to see what the world was doing. From there he espied the towers of Corfe Castle, which were just rising towards completion, and is supposed to have been filled with envy at the sight, for he seized a large stone and threw it at the castle with a design to demolish the work, but it fell short and dropped here. It is a red heath, sand, or moor stone, which, though very common all over the heath, does not abound here in any size. Geologists assert that the Agglestone is a fragment of the native rock of the county, which, from being harder than the rest of the stratum of which it formed a part, had resisted the destructive influences of wind and rain, and is thus the result of natural causes, though there have, needless to relate, been antiquaries who have seen in the Agglestone the work of the Druids, and have pointed out two or three depressions in its top as "rock-basins," denoting that it had been made use of as a sacrificial altar.

Studland Bay lies to the east of the village, and extends a league north-east from Handfast Point to South Haven Point.

An excellent view is here obtained of Branksea Castle, standing on an island of the same name, also of Poole Harbour. Studland Church, which is interesting as a Norman structure, still remains without much alteration. It is a small building, dedicated to St. Nicholas, and consists of a chancel and body tiled, and a low tower on two semicircular arches which intersect each other, a style which, according to various authorities, is supposed not to be more ancient than the Conquest. The tower is covered with lead and supported by three buttresses. The eastern window is Early English. In this church King John may have worshipped on one of the two occasions when he visited Studland. The

WORTH CHURCH, SWANAGE.

register does not date back very far, the first baptism recorded being in 1581, and the first marriage and death entries 1636. There are no baptisms from 1624 to 1636.

Beneath Ballard, on the shore, is the "Old Harry Rock;" a lofty, pillar-like rock, separated by a narrow channel from the mainland. Here it was, as the legend is told, that a ship foundered, bearing a complete peal of bells for Poole Church, owing to the sailors having jested profanely at their sacred cargo. On stormy nights the bells are supposed to ring a warning to all approaching this dangerous spot.

CORFE CASTLE.—About seven miles to the north-west of Swanage the ruined Castle of Corfe stands in a break in the hills, guarding the southern part of the Isle of Purbeck. Historians vary as to the date of the structure, and generally are of opinion that it did not exist prior to the Conquest; but there is reason to believe that a castle existed at Corfe in the reign of King Alfred. A presumption to this effect arises from the undoubted fact that he was founder of the Abbey of Shaftesbury, with which religious endowment this castle was constantly connected in the periods of our early history. Ethelgiva, daughter of King Alfred, was the first abbess of Shaftesbury, and to her and her successors high rights and privileges were granted connected with Corfe Castle and the surrounding domain.

In the year 875 Alfred, having made an agreement with the Danes, and a partition which assigned to them a large portion of the northern provinces of the kingdom, thought himself happy in the preservation of his paternal dominion; but in the beginning of the spring of this year, Halfden, a Danish general, with a very considerable force, took by surprise Wareham Castle, then the strongest place in Wessex. Alfred, finding it was in vain to conclude treaties with such perfidious people, resolved to take more effectual means to secure himself from their deceits. He succeeded in rendering their residence at Wareham so incommodious to them, that, in the year 877, the army of Pagans quitted the place, some on horseback, some by water. The naval portion proceeded no farther than Swanage, where they were attacked by ships provided by Arthur, and, a furious storm arising, a hundred and twenty of their ships were driven ashore off Peverel Point, and the portion of the army contained in them was completely

destroyed. To effect a security against their return at some future time a fortress was raised at Corfe, then called Corffe's Gate, from its position in the Purbeck Hills—*ceorfan* meaning "to cut."

Whatever may have been the size or construction of this castle in the days of King Alfred, it was greatly extended and embellished in the following century under the direction of the magnificent King Edgar. This monarch procured from Italy workmen to instruct and aid the native artisans; it is thus that the peculiarities observable in some portions of this structure and the perfection of its masonry are accounted for. With the queen of the last-named Saxon monarch commences what is important in the history of this castle. Edgar bequeathed it to her as a dowry mansion, and here she plotted and accomplished the murder of his son.

As the story goes, Edward the king, while hunting in the neighbouring forest became separated from his attendants, and being thirsty drew rein at his stepmother's door, and asked for some wine. As he was raising the cup to his lips he was stabbed in the back by one of the queen's attendants. Feeling the wound the king rode away, but gradually growing weaker from loss of blood he fell from the saddle, and his foot becoming entangled in the stirrups he was dragged along the flinty ground. At the bridge below the castle his body was found on the following day by the queen's servants, who were attracted to the spot by a bright light which illumined the body. They bore it to a mean cottage close at hand, where it lay until its interment in a humble grave at Wareham. The queen at first carried matters with a high hand, and we are told that her young son—for whose sake she had committed the crime—bewailing his brother's death, she belaboured him with a wax candle to such an extent that the poor boy could never bear the sight of one again. After the body of the murdered king had been buried at Wareham, constant miracles were performed at the grave. At last they became so frequent, and gave rise to so much suspicion, that the queen grew alarmed, and had the remains removed to Shaftesbury, whither she attempted to follow in the funeral procession, but was prevented by various miracles. To silence the rumours which caused her so much disquietude, she founded and endowed two nunneries in the neighbourhood, to one of which she soon after retired.

During the various revolutions which ensued upon the suppres-

sion of the Anglo-Saxon dynasty, Corfe Castle followed the fortunes of the English crown, and was held from the time of the Norman Conquest as a royal castle by some great baron of the victorious race. During the wars of Stephen, Corfe Castle was one of the few structures which defied him, for until the invention of gunpowder it could be taken by no other means than treachery of the garrison. In the year 1153, when an end was put to the national calamities of this reign by a treaty of peace, a primary condition of the treaty was that all the castles built on both sides since the

CORFE CASTLE FROM THE NORTH.

death of Henry I., amounting, it is said, to eleven hundred and fifteen, should be abolished. This condition did not affect Corfe Castle, which had stood out against the power of the usurper and acknowledged the authority of Henry Plantagenet when he, without opposition from any, was called to the throne after the death of Stephen in the year 1154.

During the eventful reign of the tyrannical John, Corfe Castle became again a royal residence; that king deposited within its walls his treasure and regalia, using it also for the confinement of State prisoners. Here twenty-two knights from Poitou and Guienne, partisans of his nephew Arthur, who were taken

prisoners at Mirabel, perished miserably from hunger. In such high consideration was this castle held by Simon de Montfort, and the barons who adhered to him, that it was the third which they demanded to be ceded to them when they exacted royal castles as pledges for the future good conduct of the king. Corfe Castle was put into a complete state of repair at the expense of the Crown in the reign of Edward II. It afterwards became the prison of this monarch by command of Queen Isabella and Mortimer.

In the reign of Richard II., who was the son of the beautiful Countess of Kent, Corfe Castle was possessed by Thomas Holland, Earl of Kent, and Alicia his wife, near relatives of the king. They appear to have held possession unmolested through the troubles which closed that reign. Henry IV., after their deaths, made a grant of this royal property to the Earl of Somerset, the head of the house of Beaufort, in whose family it continued until the reign of Henry VI. The Wars of the Roses did not reach the walls of this castle; but the owner was involved, and at last overwhelmed, in the ruin of the Lancastrian party. The duke's forfeited estates, including the castle and royal domains of Corfe, were then granted to the king's brother George, Duke of Clarence; but he held them for only a short period, being attainted by the Parliament in 1478, and committed to the Tower, where he was drowned in a butt of malmsey.

The castle again reverted to the Crown when the rival roses were united on the throne of Henry VII. This king immediately prepared it as a suitable habitation for his mother, the Countess of Richmond and Derby. The Countess of Richmond had early ties of attachment to the county of Dorset. The first years of her life were passed at Kingston Lacy, near Wimborne, which then belonged to her parents the Duke and Duchess of Somerset. At her death the castle, which had retained all its Saxon strength and Norman grandeur, reverted to Henry VIII. Corfe, from its isolated situation, remained unappropriated by any favoured courtier during this reign. But when Henry died, the proud and grasping Seymour, Earl of Hertford, seized upon this royal castle. A splendid inhabitant appeared in the days of Elizabeth, who granted the castle to her favourite Sir Christopher Hatton, who repaired it at great expense. In 1588, when rumours of war began to grow greater daily, Corfe became again a fortress, and cannon were for the first time mounted here. At that time the queen was

pleased to confer upon the inhabitants of the castle and borough a charter, which gave them all the same rights and privileges enjoyed by the inhabitants and barons of the Cinque Ports, including the right of returning two members to Parliament, which right it retained until the passing of the Reform Act in 1832, when it was disfranchised.

On the death of Sir Christopher Hatton, who had lived unmarried, the property passed to his nephew, Sir William Hatton. This knight left no children, and ultimately the property came to

RUINS OF CHAPEL, CORFE CASTLE.

his widow, the Lady Elizabeth Hatton, who became by her second marriage a second wife of Lord Chief Justice Coke. A daughter from this marriage in 1617 became the wife of Sir John Villiers, elder brother of the Duke of Buckingham, who was created, in June 1619, Viscount Purbeck, in the county of Dorset, in right of his wife's expected property. Lady Hatton appears to have called Corfe Castle Purbeck Castle, and to have considered the whole of that island as her own. On the death of Sir Edward Coke, his widow and child found themselves at liberty to dispose of a mansion whose gloomy grandeur and position, so remote from the busier scenes of life, were so little in accord with their

tastes; and Sir John Bankes, Attorney-General, became the proprietor of the castle.

In the Civil War of Charles I. Corfe Castle was held for the king, and in the early part of May 1643 was the only one that remained to him from Poole to Portland. The owner, Sir John Bankes, was away upon the king's service when news was brought that the seizure of the castle was intended. Whereupon Lady Bankes, the wife of the Lord Chief Justice, with the assistance

CORFE CASTLE RUINS.

of her friends and retainers, and of a governor sent from the king's army, determined to hold it if possible against all comers. The little band of defenders kept the enemy at bay until the approach of the king's forces who were coming to the rescue, and Corfe Castle was saved. It was, however, only for a time. The king's fortunes after a while began to wane: he was defeated at Naseby; stronghold after stronghold were captured by the Parliamentarians, and at last Corfe Castle was the only one between Exeter and London which still held out. Sir John Bankes was dead; Colonel Lawrence, who had borne an active part in the

former defence of the castle, began to waver in his fidelity, and the Parliamentary forces again appeared before Corfe. This time they were successful through the treachery of an officer named Pitman. A body of men were admitted into the fortress in the dead of night. The defenders resisted for a time, but were soon obliged to surrender, and so Corfe Castle was lost to the king.

Orders were at once given to destroy the castle, to render it incapable of being again defended. Parts of it were destroyed by gunpowder, and the ruin was made complete. Lady Bankes, for the part she had taken in the siege, was deprived for a time of her jointure, but after a while received it again, and lived unmolested until the Restoration.

The ruins of Corfe Castle occupy the summit of a hill rising above the town. They are extensive and massive, and from their high situation form a striking object. The walls are broken and the towers shattered, and many of the chief buildings are only a mass of ruins, but the solid keep still crowns the hill, though it is but a broken shell with all its northern side gone.

The town of Corfe is an old-world place, containing several objects of interest to the antiquary. The church, which was sadly knocked about during the Civil Wars, was pulled down and a new one erected in its stead in 1860. It is a large and handsome edifice, and contains some fine memorial windows. At the last census the population numbered 1,777. The inhabitants are chiefly engaged in the marble and stone quarries and clay works in the neighbourhood.

TOWN AND BAY FROM THE SOUTH.

REPORT ON
SWANAGE AS A HEALTH RESORT.

By L. FORBES WINSLOW,

M.B. Cantab., D.C.L. Oxon., M.R.C.P. Lond., Physician to the North London Hospital for Consumption, and to the West End Hospital for Diseases of the Nervous System, Epilepsy, and Paralysis.

SWANAGE is situated in a bay, surrounded by beautiful scenery, and with a climate and temperature in every way conducive to health, and it is a satisfaction to know that it is gradually becoming one of our chief health resorts, and is holding its own against other places which for many years have been vaunted too conspicuously, and without due deliberation and investigation, as resorts where invalids might go in case of need.

Of all places Swanage seems to be the very one for chest complications of various descriptions. Experience has already proved this, though it may not be generally known; and those medical men with whom I have been in correspondence, and who have sent such cases to Swanage, one and all testify to this being the case. And this is not to be wondered at, taking into consideration the situation of the place, and the soil. A portion of the town lies at the entrance to a valley backed by a line of chalk hills on the north, hills also shelter it on the south-west, and the sea surrounds it on west, south, and east, with the Isle of Wight in the distance; and therefore there is clear salt water washing its shores from three quarters, and in whatever direction the wind may be there is always the great benefit of the sea breeze constantly penetrating and passing direct through the town. It has been shown, and I propose to give the tables in detail further

on, that there is less rainfall here than in most other places, and this is fully accounted for by the fact of the two ranges of hills, which attract the clouds, the rain falling on them whilst the valley remains free. The same cause protects the town from fogs, which are very rarely seen in the district, and proves beyond doubt that persons afflicted with pulmonary disorders, or who are predisposed to consumption or any other complaint affecting the organs of respiration, and whose chief difficulty is that of breathing, whether that affection originates from the lungs or from the heart, would find here a pure, clear air, free, comparatively, from fogs and other impurities so frequently met with at seaside health resorts; and they would be able to breathe freely, and thus many of those distressing symptoms in their complaint would be relieved thereby.

The water supply here is most excellent, and analysis shows it to be very pure, indeed of the purest possible kind. It is derived from the greensand situated under the chalk.

Here again is another proof of its health aspects. Many diseases owe their origin to impure water, many a strong constitution is brought to the verge of despair, ruined by the contamination of the water or by an impure supply. But here no such calamity can be possible, being supplied as I have just stated. Purity of the water and purity of the air are two undeniable facts associated with the name of Swanage. The water has been analyzed by the late Professor Letheby, who found it to be in every way similar to that existing at Burton-on-Trent, and the excellency of this water is an historical fact. I have tasted the water at Swanage, and can personally testify to its goodness.

I give the two analyses of the water, that of Professor Letheby and that of Professor Bernays.

SWANAGE WATER WORKS.

Analysis of water by PROFESSOR HENRY LETHEBY, *late Professor of Chemistry, London Hospital, made October* 1864, *from the artesian well situated on the south side of Swanage.*

	Grains.
Carbonate of lime and magnesia ...	13·54
Sulphate of lime	11·84
Alkaline sulphates	6·10

	Grains
Alkaline chloride	3·66
Alkaline nitrate	0·79
Silica, etc.	0·84
Organic matter	0·24
Total per imperial gallon	37·01

The results indicate that the sample of water contains a very large amount of calcarean salts, chiefly as sulphate of lime, . . . and approaches the composition of the water at Burton-on-Trent, as mentioned before, which is celebrated for its excellence in brewing pale ale.

In addition to this analysis of Professor Letheby, made in 1864, Professor Bernays also confirmed the excellency of this water in a further analysis made in 1882. He found it "clear, greenish-blue in bulk. No deposit. No unpleasant odour on slow evaporation. Residue white, crystalline. Hardly perceptible change of colour on ignition, no odour, ash white."

Professor Bernays found this water to be "perfectly free from organic sources of contamination." This is a most important fact, and one which I would draw especial attention to as a great proof of its purity.

Professor Bernays concludes a long and voluminous report by stating that "this water is pure *as regards any sewage or other contamination.* It is a hard water, and continues so after boiling."

One of the leading physicians in London, who is attached to one of our largest hospitals, and who for some years spent his autumn holiday at Swanage, considered that among the chief attractions at Swanage "the great purity of the air and of the water stand high."

In a letter to Mr. Burt, dated January 11th, 1883, he writes: "Having already satisfied myself as to the practical freedom of the water from organic impurity, I have done what I should not do everywhere—I have allowed my children to drink it freely. For people in average health it is, in my opinion, a wholesome as well as a very agreeable drinking water. It must be confessed that it is less agreeable for washing than for drinking purposes."

In addition to analyzing the water from the artesian well on the south side of Swanage, Professor Bernays also made an exhaustive analysis of the water for the supply of which Mr. Burt

obtained a special Act of Parliament in 1884. I here give *in extenso* the result of his analysis.

Analysis of water by PROFESSOR ALBERT BERNAYS, *Professor of Chemistry, St. Thomas's Hospital, of the new water supply, granted by special Act of Parliament*, 1884.

	In grains per gallon.
Total residue on evaporation	16·94
Ash	16·24
Total hardness	12·50
Permanent hardness	1·50
Free ammonia	0·0056
Albuminoid ammonia	0·0035
Oxydized nitrogen	0·132
Organic carbon	0·026
Organic nitrogen	0·0053
Potass oxide	0·93
Sodium oxide	1·01
Lime	6·16
Magnesia	0·83
Oxides of iron and alumina	trace
Chlorine	1·99
Sulphur trioxide	0·47
Nitrogen pentoxide	0·51
Carbon dioxide	5·21
Silica	0·35

These constituents are probably thus contained:—

	Grains per gallon.
Potassium sulphate	1·02
Potassium chloride	0·60
Sodium chloride	1·91
Calcium chloride	0·84
Magnesium nitrate	0·70
Calcium carbonate	10·25
Magnesium carbonate...	1·34
Iron and alumina	traces
Silica	0·35
	17·01

The carbonates are, of course, present as bi-carbonates.
After boiling the water is beautifully soft for washing or drinking.
It is an excellent water.

(Signed)

ALBERT J. BERNAYS, Ph.D., F.C.S., F.I.C.,
Prof. of Chemistry at St. Thomas's Hospital,
Analyst to Kent Water Works Company, etc.

This water is clear, colourless, inodorous even on warming. Amount of gas moderate, yet fairly aërated. Residue on evaporation white, granular, darkening distinctly with burnt odour on ignition. Ash white.

The greater part of the water supplied is now from the chalk on the northern side of Swanage; both are excellent waters, that from the chalk being softer than the well source.

With regard to the water supply it might be mentioned that records were published December 21st, 1877, in the *Sanitary Record*, of the water supply at Weymouth. And a few years back there were analyses of about eighty different waters made throughout England. From the facts thus stated I gather that Weymouth, Ryde, and one other place were so superior in their water supply, and its composition, that they were put in the top list apart from all the other supplies therein mentioned. From the report on the Weymouth waters and the description of the situation and the surroundings, the Ulwell and Weymouth waters appear identical, both coming from between the greensand and the chalk, and from the same range of hills. There is only one conclusion to be arrived at from this—namely, that inasmuch as Weymouth water takes such a high place at the very top of the tree, Swanage water should at least be considered of equal value and salubrity.

The soil of Swanage towards the hills is either chalk or limestone, but in the middle part of the bay it is clay and sediment to a great depth.

There can be no doubt as to the healthiness of living on high ground where there is a free vent to the splendid tonic air of Swanage.

The south part of Swanage is all on solid hard stone formation, but at a greater depth from the surface; this part has always been considered the healthiest part of Swanage, and to this I would draw special attention to those contempalting taking up their

residence here. I understand that it is the intention of Mr. Burt to further open out this part of Swanage; and ere long, no doubt, it will be occupied by those seeking a most healthy and desirable residence.

During the third week of December 1889 I paid my last visit to Swanage, and was again personally conducted by Mr. Burt over his property on the south and elevated part of Swanage. It is called the "Durlston Park Estate," and consists of between 150 and 200 acres in all. A great deal of the land is already laid out and ready for erecting residences here. It is also surrounded by foliage and tropical plants of a most luxurious description, many of which plants can only be cultivated on a healthy soil and in an equable temperature, as is here found. Some of the fine trees were planted about twelve years ago, and are gradually growing up; and promise ere long to become fine specimens of their botanical class. This property may be said to commence at the residence of a gentleman who, though living at Bournemouth, recognizes the advantages of Swanage over Bournemouth during a certain portion of the year, and who has built the house with a view of placing it at the disposal of his wife and family, who come over here from May to November every year, during the period when Bournemouth is so relaxing, and consequently has proved itself an undesirable residence for many persons. This is situated on the top of the cliff, and is called "Craig-y-Don." It has lovely sea views, and of the valley generally; and the air is splendid. The "Durlston Park Estate" is situated on solid hard stone foundation, and is therefore most suitable for residential purposes. It may be said to face the south, with the Isle of Portland to the west, the Isle of Wight to the east, Cherbourg at a distance of 67 miles to the south-east, and Bournemouth to the north-east. The whole estate possesses sea frontages and magnificent sea views, being on the summit of the cliff. The air is splendid, and a better site for a permanent residence can scarcely be conceivable. A road called the "Zigzag" leads direct down the cliffs to the seashore, so that those residing there can easily get direct to the very water's edge. The water supplied to this estate is from Mr. Burt's artesian well, and is therefore excellent. The walks along the edge of the cliff are well planned out and made, being surrounded by trees and green shrubs. Connected

DURLSTON HEAD AND CASTLE.

with Durlston Park Estate is "Durlston Park West," consisting of 45 acres, all well arranged and suitable for building purposes.

"Sunnydale" shrubbery is well worthy consideration and mention. Here can be seen many very rare plants, flowers in full blossom even in the coldest part of the year, and where can be recorded the greatest warmth existing at Swanage during the colder months. The thermometer registers one degree higher minimum than can be found down in the bay itself. During my recent visit to Swanage I observed what I would desire to draw special attention to—namely, the fact that the fogs and mists hang about the channel, but do not touch Swanage. This I had a good opportunity of myself observing, and I also saw roses and other flowers in full bloom.

I might mention that the Durlston Park Estate extends nearly as far as the lighthouse on Durlston Point from "Craig-y-Don;" and there is great opportunity for opening up this most desirable locality as a very suitable residence for invalids.

I would also draw attention to "Durlston Castle," erected by Mr. Burt on his estate—a beautiful building magnificently decorated and arranged as a recreation place for those who visit the locality. There is an observatory on the top, which has been lent to Lloyds for the purpose of telegraphing the vessels which pass Durlston Head. This is to commence from January 1st, 1890. A telegraph is to connect this with Swanage, so that ships passing will be telegraphed to Swanage and so on to London.

I would like to draw attention to a most interesting and significant fact, which illustrates, beyond all doubt and argument, the healthy aspect and situation of the Durlston Park Estate, to which I have just referred in detail.

On December 6th, 1881, a large herring, caught in Swanage Bay, was hung up by Mr. Andrews in the Steavenson's Screen of the Meteorological Society's Station, Durlston Park, 178 feet above the level of the sea.

It was taken down by the same gentleman in May 1884, having remained where originally placed two years and five months.

It weighed when first caught eight ounces and a third. It was also weighed when taken down, and it was then one ounce and a third.

The fish was full-roed, it was not salted, gutted, or treated in any way; and when removed was found to be without the least

decomposition, and during the whole of the period it had been exposed it had not exhibited the least trace of such.

I might mention that in consequence of the opinion of an eminent medical expert this experiment was made, and he absolutely foresaw what would be the result.

In a letter to Mr. Burt with reference to the purity of Swanage air he states that if he were asked to select the purest air in England, or anywhere else as far as his knowledge was concerned, he would take the *top of the hill at Swanage*, and said: "I will give you an instance—the 'High Cliff' at Hastings has the reputation of having the purest air in England, but if you take a herring just caught from the sea and hang it up there, it will putrefy in time, as it would anywhere else; but, if you hung a herring up on the *top of the hill at Swanage* (Durlston Park), it will '*dry off*.'" Hence the above experiment, which has been repeated many times by Mr. Andrews with uniform results.

The herring, in question, is now perfectly sweet, and nothing but skin and bone. Mr. Burt will show it to any one with pleasure.

This shows conclusively the influence of elevation, temperature, and climate in producing and continuing a healthy state of affairs, and proves the advantages to be gained by a residence on elevated ground surrounded by the sea, such as is to be found on the Durlston Park Estate, together with its great natural advantages, the beauty of its situation, and the tonic invigorating air to be found there.

The drainage of Swanage has occupied the attention of those interested in the place for some time, and a vast improvement has taken place in this respect. The cesspools, which were formerly open, have been closed; in the days when open there was not the same good supply of pure water as now exists, it being then obtained from wells. These wells, with the cesspools, are also filled up and closed, so that there now appears a positive improbability of any epidemic occurring here, and there is nothing detrimental to health at all. The drainage is general, and Professor Robinson, of Westminster Chambers, has prepared plans for a thorough system of this, which will ere long be put into operation. About five years ago, there was a very slight epidemic of typhoid fever at Swanage, but only two deaths. The fever was distinctly traced to a dairy at Swanage, where the utensils were washed in foul water, obtained from a brook in which a drain

BATHING GROUND.

had emptied itself. There has been no epidemic of any description since, which speaks volumes as to the healthiness of Swanage. There is not one single place which may be said to be totally free from epidemics—and every year discloses this fact—and these are generally of a severe type. But here we find that though the epidemic was one of typhoid fever, there was in the air and surroundings at Swanage so much of an invigorating and healthy nature that the mortality was so small, and those affected were easily restored to their wonted state of health. I am desirous of revealing everything which has come to my knowledge, and therefore I simply give these facts, and also that there was a distinct reason for it. Since this period the drainage has so much improved, and other matters have been so satisfactorily attended to, as to make Swanage as healthy as human power can, and I here say authoritatively and emphatically that a healthy state has prevailed there ever since the said epidemic happened, which as I have previously said can be accounted for and traced to its origin.

I also affirm that few places, if any, can show such a clean bill of health as Swanage does, and therefore it is with the greatest satisfaction and pleasure that I am able to draw public attention to the healthiness of the place, and to the general excellences of its surroundings. The Local Board has dealt vigorously with all matters affecting the health of Swanage and its inhabitants since this period.

The bathing at Swanage is excellent, and perfectly safe, there being no holes for those who cannot swim to suddenly find themselves in. The sand is level and hard, and as such is excellent for bathers, the sea being generally as calm as a lake; and in the bay there is little fear of being knocked over by the waves.

The healthy state of Swanage and its other advantages are gradually becoming more generally known, and since the railway has been opened the number of seekers after health has increased. In 1889 there were 30 per cent. more than in 1888. The fact that they come earlier and leave later is a proof of the benefit which is found to the invalid and others in the colder months of our inclement and treacherous climate, and in the more exposed parts of England. The swallows' sojourn, who tolerably register any climate by their absence and presence, during the last nine years was recorded by Mr. Andrews in *The Field*, the dates of their latest stay being, for the nine years, November

11th, 10th, 8th, 13th, 14th; October 31st, November 21st, November 18th and 18th. This refers to flocks of birds, not to solitary ones, and is the latest recorded stay of swallows in numbers in England. Swanage also records their arrival in England usually before they are seen in other localities. An observer in a more northerly part of Dorset, in an experience of twenty-five years, has fixed the date of their departure in his locality as October 16th, or about one month earlier than at Swanage.

Statistics have proved that Swanage is the coolest summer residence on the south coast, and is another proof of its fitness for invalids afflicted with other complaints besides those influencing the respiratory or circulatory systems.

Meteorological *data* have also shown that the least number of rainy days are found in Swanage as compared with other parts of England, and in this calculation eighty-six stations are considered. It had also in 1881 the smallest rainfall of all seaside resorts except Worthing, Ramsgate, and Southbourne, and also the smallest amount of cloud in England except Bournemouth, Worthing, Portsmouth, and Finchley. It possessed the warmest night temperature in England (minimum) except Ilfracombe, Ventnor, and Maker. It had the smallest daily range in England, except Ilfracombe. The following table will illustrate this in 1881 :—

	RANGE.	HEIGHT ABOVE SEA.
		Feet.
Ilfracombe . . .	9·1	25
Swanage	10·0	178
Llandudno . . .	10·3	79
Ventnor	10·9	80
Scarborough . . .	11·2	157
Ramsgate	11·4	105
Weston-super-Mare . .	11·4	20
Worthing	11·6	21
Sidmouth	11·7	186
Torquay	12·0	400
Bournemouth . . .	13·6	134

These data are taken from recently published reports, and there is no reason to believe but that they give a very fair

average of the yearly discrepancies between the various places here mentioned as being health resorts for invalids. There is no occasion to compare the climate and health properties of Swanage with such places on the Continent, where invalids are wont, though not to the extent they used, to be sent by their medical advisers. This, I am glad to say, is becoming more uncommon, and physicians are beginning to look to their own country for such advantages. At a recent meeting of the British Medical Association at Leeds, very strong expression was given on this question, and the universal opinion appeared to be that it was cruel to send persons afflicted with consumption a long way from their own homes and surroundings; and that inasmuch as the two things to be considered in consumption were the prolongation of life and the warding off the complications of the malady, and alleviating symptoms as they occurred, it would be very desirable if a place in our own country could be found where these two could be carried out and combined, with equal good accruing as on the Continent.

The time has now arrived for Swanage to receive its due, and to be brought prominently before the profession and the world, as a place possessing the desirabilities required so far as climate, temperature, and situation are concerned, and which are to be found in the old-fashioned and established continental health resorts, formerly so sought after and so popular. Many a poor invalid sent abroad with only a small amount of vitality remaining exhausts this little before arriving at his destination, and succumbs to the malady before those he loves so dear can arrive on the scene and close his last days by their loving care and solacer Nothing appears more dreadful than dying in a foreign lanie among strangers, whilst those near and dear are separated by many miles from the last and final scene. Now the railway has brought Swanage and London into such close proximity that all such danger as we have shown, and which might happen in a foreign health resort, disappears, and a telegram can bring down in a few hours, should any complication arise in the patient, the friend or relation.

Many noted places in the south of France have very piercing winds, which play havoc with many a poor invalid suffering from pulmonary complaint. The wind, sometimes the *mistral*, must take away what strength remains, and will destroy many

a delicate constitution. I have previously drawn attention to the fact that there is this freedom from penetrable winds, which is so essential to consumptive patients, at Swanage, and that no fear can be apprehended of such a calamity happening as is caused by the piercing winds found in the south of France.

The spring is mild, and should the wind be in the easterly direction, which is very rare and only temporary, it makes but little impression at Swanage; the winters are also mild, and not once in ten years is the ice of greater thickness than half a crown. As a proof of the gradual manner in which Swanage is becoming known, it might be mentioned that a large number of professional men now go there; and this year there have been one-third more in the number of visitors than has been found in other years; and doubtless this increase will continue as the beauties and healthiness of Swanage become generally known.

There is another point upon which much stress might be laid. I allude to the absolute freedom from epidemic, the average rate of mortality during the last ten years being 14·86 per 1,000.

There is an absence of stagnant water or sediment to be found at Swanage, and the sea is always clear, except after a heavy rain, and even then when rendered turbid it continues so only for a very short period, soon regaining its natural clearness and colour. The following table gives the Swanage rainfall during the years 1887, 1888, and 1889.

SWANAGE RAINFALL, CALCULATED IN INCHES.

	1887.	1888.	1889.
January . . .	2·86	1·60	0·85
February . .	0·88	0·94	1·54
March . . .	0·86	3·35	2·12
April . . .	0·65	1·26	1·82
May . . .	1·91	1·91	1·31
June . . .	0·93	2·39	0·66
July . . .	0·65	3·01	2·00
August . . .	2·37	2·07	2·53
September . .	3·49	1·78	0·51
October . . .	2·02	2·35	6·31
November . .	3·52	5·91	1·39
December . .	2·21	1·97	2·51
Inches . .	22·25	28·54	23·55

This shows what I have stated before, that the rainfall at Swanage is very small as compared with published records of other places.

Such a condition of things ought most admirably to suit persons who are subject to asthmatic attacks, or who suffer from annual winter coughs, or irritation of the bronchial membranes, and who would be more liable to have an exacerbation in their symptoms when exposed to a damp or marshy climate. The range of the temperature of Swanage being so small compared with most places, the air being so bracing and dry, and the nearly total absence of fog, frost, and snow, should bring the little town to the notice of all seeking a healthy spot, whether to go and settle down definitely or during the colder months of the year.

I have previously mentioned that many diseases, such as typhoid fever, diphtheria, and various obscure complaints, owe their origin to impure water.

Whilst on my late visit to Swanage I had ample opportunity of personally inquiring into these matters, and I made myself sufficiently acquainted with the water supply and drainage of the place, owing to the courtesy of Mr. Burt, to whose great energy Swanage is becoming known as a health resort, and to whose perseverance the people are indebted for the railway and the general excellence of its surroundings. To a person worn out by incessant work, whose nervous system requires relaxation, not only from mental exertion, but from all possible noise and excitement, he will find in Swanage a place where there is freedom from the incessant and unnecessary excitement met with at fashionable watering places, in many of which, from the terrible noise occasioned by German bands or strolling nigger companies, it is impossible for the invalid to obtain what he is sadly in need of, and he is vainly attempting to find. But in Swanage, happily for the inhabitants and for invalids, there is, together with the glorious climate, beautiful surroundings, and healthy locality, a perfect freedom from all such nuisances, which are becoming the pest of not only English health resorts, but which have gradually found their way to continental towns of a similar description.

The forms of complaint suitable to the climate of Swanage may be specially mentioned as, first, cerebral complications, where freedom from all noise is essential, and where a healthy

climate and good, pure air and water become the principal elements in the treatment of these complaints.

All medical men in England are conscious of the fact that the influence of climate over disease is very great, and in choosing a locality we must consider in what way the place selected can do its work effectually so as to modify and alleviate human suffering. In considering this matter many things have to be carefully weighed in the balance. We have the elements of temperature, the amount of moisture or dryness in the air, the presence or absence of fogs, the amount of rainfall, the situation of the *locale*, the supply of water, and the drainage, all of which I have shown are excellent at Swanage. And all these will themselves become essential in the care and management of that class of maladies to be dealt with and combated,—I allude to diseases of the lungs, or affections of the circulatory organs, and to all complaints associated with difficulty in breathing. In atmospheres which are more or less damp, and which cannot be depended upon, we have ague, rheumatism; and it has been shown, in the annual report of the medical officer of the Privy Council, that the much dreaded complaint consumption, and its spread, bears a direct ratio to the dampness of the soil. From the previous remarks it may be gathered that Swanage must act as a preservative so far as this is concerned.

One of the principal causes for a return of the more unpleasant symptoms in disease is a sudden change of temperature, as may be found in the south of France and in Italy; the sudden change from warmth to cold at Nice is a proverbial fact. This frequently renders the consequences most severe to the invalid, and often brings on, in cases of consumption, attacks of hæmorrhage, which prove fatal to the sufferer. In Swanage no such sudden change is observable, as may be seen from a perusal of the meteorological tables.

As an instance, in the recent month of December (1889) the mean *minimum* temperature at *Nice* for the month, as published daily in the *Standard*, was 38·5, while at Swanage it was 36·8; or a difference of less than two degrees only! whilst the *range* of temperature is very considerably less at Swanage than at Nice.

Persons afflicted with consumption may, in the early stages of the complaint, be gently guided through a severe and distressing winter without any serious complications arising if they

choose such a place as Swanage for their residence during the treacherous months of the year. At Ventnor there is a hospital for such cases; but by comparing the advantages for the relief of this complaint between Swanage and Ventnor, it will be at once seen that the preference as a resort for this malady must be given to Swanage over Ventnor, inasmuch as the former place has the smallest daily range of temperature in England, and the smallest amount of cloud, except Bournemouth, Worthing, Portsmouth, and Finchley. It follows therefore, as a matter of course, that as consumptives are known to improve at Ventnor, and many to be safely guided through the cold months without any harassing and distressing symptoms arising, and without any exacerbation in their complaint, a place which can be shown to possess even further health advantages, as Swanage evidently and undoubtedly does, should commend itself to the most earnest consideration of all seeking such an abode.

Another great advantage to be met with in Swanage, speaking from a health point of view, is the smallness of the population. When a place is over-crowded this state of affairs increases the liability to disease, and prevents those living there, or who have gone in search of health, from enjoying the free benefit of fresh air, which becomes contaminated by germs emanating from crowded rooms, or from the effluvia of drains and sewers and decomposing vegetable matter, and prevents the inhalation of pure oxygen and ozone, so essential in preserving health, and which in themselves assist the poor stricken down invalid in recovering his *vis vitæ;* whilst constantly breathing impure air, such as is found in an over-populated place, not only impedes recovery, but positively produces disease in itself, and recovery to a state of convalescence in those who are suffering from any affection is tardy, and in some cases positively prevented. Fever is spread, and the place at once goes into the black books of health resorts.

From what I have previously said of Swanage it can easily be seen that there is no such danger existing here. The air and water supply being good, and the former most invigorating and exhilarating; whilst practical experience has shown that the effect of this soon becomes evident to the invalid, who rapidly regains his former health after a short residence here. I have also found that so great are the benefits to be here observed that often an immediate change takes place for the better in the

invalid. This is not to be wondered at, for there is not only the great change of scene and surroundings, but also the advantages to be found here, which in themselves are so conducive to health.

In considering the natural advantages of any place, various things have to be taken into careful deliberation. The winds, the rainfall, the range of temperature, the state of the atmosphere generally, and its pressure; also the conditions of the place which impede or assist circulation and respiration, the ventilation and climacteric influence, the situation and aspect of the town, the humidity, pressure, and electric tension, and any modifications of these. It is a *sine quâ non* that these should be in a satisfactory state to commend the place to our consideration as a residence suitable for invalids, who are most sensitive to sudden or other changes of the temperature and weather; and therefore such a place should be recommended where but slight variations in these exist. A fluctuation in temperature or in moisture will affect materially their condition, and will impede the recovery from disease, and often aggravate their sufferings in a way inconceivable to many.

In England, for more reasons than we can here mention, our climate is a strange and peculiar one, and naturally so, in consequence of the very variable winds to which we are subjected at various seasons of the year. It is of great rarity to find any place where an equable state of things can at all be depended upon. The difference between the temperature of winter and summer is on an average about 21°. The annual mean temperature in England in the country is 49·721°, in London it is 1·579° higher. The annual average temperature during the four months of the year, according to Mr. Glaisher, is in winter 39·333°, spring 52·833°, summer 59·933°, and autumn 44·600°,—the mean temperature of the summer half-year being 56·524° and that of the winter half-year, 41·718°, the difference thus between the two being 14·806°; whilst the mean temperature by day, the highest, is on an average for 20 years 56·345°, whilst the lowest temperature by night is averaged at 42·204°, the difference being 14·141°. In all latitudes January is the coldest month in the year, and July the warmest north of the equator above 48°, and August of all lower latitudes. The effects of temperature in causing and preventing disease are most marked. A warm and equable climate, as seen in Swanage, lessens the tendency to, and diminishes the mortality from, consumption, apoplexy, and heart complications. Bronchitis

and inflammation of the lungs decrease as the temperature of the year advances.

During the dry and hot weather fevers become continuous, and in weather characterized by excessive moisture they often become malignant in their type.

The vital power is depressed by continuous cold, the blood gravitates to the most dependent parts of our frame, the mucous membranes become congested, and we have bronchitis, and inammation of the internal organs generally. Sudden death and paralysis frequently occur during excessive snowstorms, or when high winds prevail.

In October, which is generally proved to be the wettest month in the year, the amount of rain-fall is 3·06, whereas in December, the finest month in the year, it is 1·50; the next wettest months in the year being November, July, and August, the amount of rain respectively being 2·433, 2·773, and 2·50. If we take the average of a number of years we find that it rains in this country nearly every other day; but in some localities rain falls almost daily, whilst in others the annual fall is below the average. Temperature, so instrumental to a healthy state of affairs, does not solely depend upon the direct influence of the sun's rays, but very much on the aspect of the place and the variableness of the climate. In Swanage the inhabitants owe their good health and immunity from disease to the conditions there found. Many persons who are subject to periodic attacks of asthma, and who have what is called a "winter cough" as regularly as the cold months come round, cannot breathe freely in places which are subject to a constant change in temperature, or where too much moisture is found in the atmosphere. An equable temperature, fresh, pure air, plenty of ozone, which are to be found in Swanage, are absolutely necessary for such individuals, to enable them to enjoy life at all, and modify the complaint in the slightest degree. A chalky soil also is beneficial to invalids; ozone is in itself a stimulus and remedial agency in ameliorating disease, and Swanage abounds in ozone. That harassing symptom, a dry hacking cough, so symptomatic of the early stage of consumption, is much relieved by the inhalation of dry warm air, accompanied by a clear and bracing atmosphere, which we have shown that Swanage possesses. Irritability of the whole respiratory tract requires this dry soil, together with plenty of ozone and a freedom from too rapid

changes in the temperature. Dyspeptics also would soon find an improvement in their varied symptoms by residence here. The walks are plentiful, and many a hypochondriac will forget his ailments and lose his melancholic turn of mind and enjoy the health-giving exercise whilst imbibing the tonic and nutritious air of Swanage.

In considering the advantages to be derived from a residence during the cold weather here, we must briefly compare it with other health resorts. In England I may mention Worthing, Dover, Brighton, Ventnor, Bournemouth, Clifton, Torquay, Penzance, and Malvern. In the south of France, Nice and Pau. Worthing possesses a soft and moist climate, and though situated on the south coast is supposed to be warmer than Brighton, though only a few miles distant. It possesses a clay soil, but there is always a peculiar effluvium there, at least I have frequently observed this when the tide is low, which makes me question whether such can be healthy in itself. Dover is much exposed to north winds, though it is sheltered by the cliffs from the east ones. The same applies to Hastings, to which place many consumptives repair; the lower town is sheltered, but on the east or west hill the winds are frequently cold and piercing, and the invalid is unable to bear their severity and intensity. Brighton, now called "London-super-Mare," is simply a fashionable watering place, over-crowded in every way, with nothing to commend it as a residence for invalids; and I much question whether the system of drainage is good. There is a cold dry east and north-east wind during the spring months of the year, and this would make it a place quite unsuitable for those affected with pulmonary complaints.

Ventnor is doubtless much resorted to by Londoners who are afflicted with pulmonary complaints. It has the advantage of being close, and has a soft and warm climate, and the air is bracing and invigorating; but though this place may be considered by some to approach nearly perfection it does not possess in every way the great advantages of Swanage. One great disadvantage is that it is overrun with invalids of every description, which is very depressing. Bournemouth, though on the opposite side to Swanage, is in no way so good a residence for invalids. The air is much *too* relaxing, and after staying there a short time the invalid feels this. There is a want of the tonic air so conspicuous

in Swanage. I also would mention the comparative warmness of the Swanage mimimum temperature, and the coolness of the maximum temperature, throughout the year, as compared with Bournemouth, and hence of course the smallness of range at Swanage. Many of the invalids from Bournemouth will probably migrate over to Swanage as time rolls on.

In Clifton the air is too dry, from the fact that by its situation the limestone rock absorbs nearly all the moisture. Torquay is warm, but the temperature is not equable; and Penzance, though it has some undeniable advantages, is so far off that this must be taken as one great drawback to a temporary residence. In the south of France, especially Nice, the nights are so cold, the days vary in degree as to heat and cold, and the winds are cold, dry, and sharp, being chiefly in the northerly direction. I give the annual mean temperature of some of these places, including Swanage.

Annual Mean Temperature.

London	50·48
Hastings	50·73
Brighton	49·45
Ventnor	50·69
Clifton	51·26
Torquay	52·12
Penzance	51·80
Nice	59·71
Swanage	50·00

The daily range of temperature at Swanage averages 9·5 degrees annually, being the least range on the south coast, whilst in the four winter months the daily range averages only 7·6 degrees.

The old writers on disease attach very much importance to the situation and aspect of a place; and Hippocrates was one of the first physicians who especially drew attention to this. The purity of the Swanage air must act very beneficially in exterminating disease, and acting as a remedial agent in preventing it. The chief essentials to a healthy state, and therefore the best preventatives against disease, are a good aspect, a proper soil and elevation, a good temperature as unchangeable as possible, and a proper amount of dryness or moisture in the atmosphere. Especially

when dealing with mental disorders we require a cheerful surrounding, with nature's beauties to absorb and occupy our thoughts, and cause us to forget any imaginary or real grievance which may be engaging our attention. The lovely situation of Swanage, its walks by the sea, or in those artificial paths cut on the very mountain edge, constructed out of what was a mere wilderness, and which seemingly was impossible, with the beautiful trees, which though but recently planted are growing rapidly,—the whole planned and carried out through the energy and ability of Mr. Burt,—are such that must ever give to the place a charm, associated with all the advantages which nature has already bestowed upon it. A walk to the caves or to the globe at Durlston Head, and the enjoyment of the glorious view there obtained, will give increased vigour to many a poor invalid prostrated by disease, whether that be mental or bodily. The tint of the leaves adds much to the beauty of the summer and autumn day. Change of scene is of little value in cases of advanced consumption, and it is only in incipient cases, and where the malady is threatening, where much benefit can ensue from a residence in a locality possessing climacteric advantages.

The advanced consumptive rarely becomes conscious of his real condition, and to the last he believes in a possibility of throwing off the dire disease, and is cheerful to the end.

Struma causes sad havoc in various constitutions, and there is no complaint where the influence of climate plays such an important part in influencing the nature of this obscure but unfortunately increasing mischief as this. Many of the ills which flesh is heir to are due to strumous constitutions. Consumption frequently is the result of struma, which may be either acquired or hereditary. In this sort of complaint there is nothing like a residence, combined with good water, pure air, and a dry and bracing residence, by the sea-coast. A soft, too relaxing, and moist atmosphere is worse than useless in combating with this malady. To eradicate such a complaint from the constitution is not a matter of months, but of years, and a permanent residence at Swanage would be highly desirable in every way. Children suffering from rickets, or from some strumous affection, are taken frequently to the seaside for a few weeks, under the unfortunate belief that a short sojourn in a healthy climate is all that is required to restore them to health.

This is a fallacy, for, whilst necessitating a great expenditure of time and money, it is not in any one instance followed by good and permanent results. What is here wanted is a residence of long duration in a place which in every way, from its situation and other surroundings, is suitable for such a case. I say emphatically that no better place could possibly be chosen to combat with the malady than Swanage; and I should think that in a year or so after sojourning here, that the more unfavourable symptoms will have disappeared, and the sufferer be in a fair way to regain his pristine vigour. On the other hand, if no such change in residence is insisted upon, and he is subject to the vicissitudes of wind and weather, he will doubtless become a chronic invalid, and lose all hope and chance of throwing aside his infirm condition; whilst had he followed out the advice here given, and gone to Swanage whilst the disease was in its infancy, and whilst there was a chance of warding off the more serious complications and *sequelæ* incidental to the affection, he would have had the best possible chance of regaining health and strength. For this sort of case, so frequent in our great community, Swanage must especially commend itself, for the reasons previously stated.

Incipient consumption, or the threatened symptoms in those predisposed to the complaint, can be relieved here, and the most marked and distressing signs kept at bay, provided the sufferer himself performs his part of the contract, and does not, as he apparently improves, become imprudent in his own habits and actions.

I have shown that the wind is rarely in the east at Swanage, and the dryness and condition of its temperature are much dependent on this. Many complaints owe their origin to the east winds. Affections of the throat and air passages, and even inflammation of the lungs, are caused primarily by an exposure to the east wind. Consumptives become worse, and die from this exposure, which is often associated with fog; but as I have shown this is rarely met with at Swanage. Whilst the healthfulness of a west wind is well known both to those in the enjoyment of a *mens sana in corpore sano* and to the poor afflicted ones stricken down by disease.

The soil on the hilly ground, to the north and north-west of Swanage, is formed of chalk like the South Downs, but the rock in some places is much harder.

The rising ground on the south is formed of Purbeck beds, which comprise a series of clays or marls and limestones. Some of the upper beds as well as the central beds are hard and solid stone. The lower Purbeck beds are mostly soft and crumbling marls.

The vale that lies between the chalk hills and the Purbeck stone hills of Swanage is formed of sands and crimson-coloured clays that have been hollowed out, forming the bay. These strata are of the age of those in the weald of Kent and Sussex.

The soil on the south side is therefore dry and tonic, and most invigorating, and as such is a very suitable soil for invalids to reside on; whereas too much clay in a soil, as is found in some of our health resorts, has been found to be unhealthy from the accumulation of superficial water and moisture, and may give rise to a marshy condition, so conducive to asthma and ague, and which often lays the foundation of disease. A gravelly soil is healthy, for the simple reason that the drainage is so easy, and there is little risk or fear of malaria; but beyond this we can say but little to commend such a soil to the invalid for a residence.

Of course in dealing with this part of our subject I have a difficult task to pursue, so many things have to be taken into consideration in influencing disease and in treating it successfully. I can only speak confidently as I have found Swanage, and in stating that it in every way comes up to my ideal of a health resort I have not in any way exaggerated the subject. The *data* placed before me and my own investigations whilst there are my excuse for writing as I now do on the beauties and health properties of the place.

With regard to the amount of sun, Swanage can give the splendid record of 41 per cent. of possible duration of sunshine annually. From this fact it is well adapted for invalids. The comparative freedom from fogs must commend itself; the peculiar position of the high cliffs and Purbeck hills, formed like a horseshoe from the posterior part of the town, so that neither the sea fogs drifting up Channel, nor the land fogs on the north side of the Purbeck line of hills, can reach Swanage valley; consequently a fog there must be very exceptional.

During the early part of December 1889, Brighton was enveloped in very thick fogs for many days: so thick were these that the sea could not be distinguished. Hastings has also

suffered during this period from fogs. Swanage therefore claims great advantages, which are perceptible, over these two places.

During the year 1889 there has been but one fog at Swanage. This lasted only four hours, and occurred on the 17th of November. It appears that this fog arose under such circumstances in which alone fogs could occur there. For some days previous to this fog, the barometer had registered very high degrees, and there was consequently an absence of wind, and the channel outside became full of fog, there being a slight draught of south-easterly wind which wafted some of this fog into the otherwise sheltered bay of Swanage, where it remained for an hour or so, until a current of air from an opposite direction carried it out again into the channel. It is only when this south-east wind occurs that a fog can settle at Swanage, and it is of very rare occurrence. During the years of meteorological observations, only two fogs have been thus recorded at Swanage. Although fogs could be observed hanging about the channel, they did not molest Swanage.

This is a positive proof of the salubrity of the place. Those affected with irritation of the bronchial organs, whose great difficulty, and consequently whose chief suffering, consists in gasping for breath, and to whom the constant inhalation of fogs is most pernicious will find at Swanage, from its nearly absolute freedom from such influences, a habitation where they can live and breathe in peace, without the constant panting for breath so characteristic of their disease; and where, from the removal of the concomitant unpleasantness of fogs, they can enjoy the air of purity, so essential for an amelioration in their symptoms.

I propose to refer to the meteorological reports for the years 1881, 1882, and 1883, the first taken from seventy-seven different stations, 1882 from seventy-nine, and 1883 from eighty-one stations (situated at 178 feet above the sea-level).

In 1881 the mean temperature of Swanage was 48·8, and in 1882, 50·0. The mean minimum night temperature for the year 1881 was 43·8, and was only exceeded, during the year, by three stations in England—viz., by Maker, where the mean temperature was 44·5; Ventnor, where it was 45·0; and Ilfracombe at 46·5. In 1882 it was 45·3 at Swanage, whilst at Maker it was 45·8, and at Helston 46·1, at Hastings and Weymouth 46·2, Falmouth and Ventnor 46·9, and Ilfracombe 47·8.

The mean daily range of temperature at Swanage in 1881—that is to say, the difference between the daily minimum and daily maximum temperature—was 10·0, being the smallest range of all stations except Ilfracombe, which registered 9·1, and Scarborough 9·7. In 1882 this was at Swanage 9·4, being the smallest but two stations—viz., those of Falmouth at 9·1 and Ilfracombe 8·4.

With regard to the greatest amount of sunshine, Swanage stands fifth on the list of seventy-seven stations in 1881, and in the same position out of seventy-nine stations in 1882, and also in 1883 out of eighty-one stations (fifth in three consecutive years). The amount of rainfall for 1881 was 30·37 inches, falling on one hundred and twenty-four days, having the smallest number of rainy days of all the stations; and in 1882, 34·92 inches, falling on one hundred and seventy-two days. During this year there were eight stations recording a smaller number of rainy days. In 1883 the rainfall was 27·36. It might be as well to mention that 0·006 inches or ten minutes' duration of rain, constitutes a "rainy day."

The actual lowest and actual highest temperature recorded at Swanage in 1881, the year of the great frost, was 12·7 as the lowest, and 81·7 as the highest, whilst these were at Bournemouth respectively 11·2 and 85·5. In 1882 the lowest at Swanage was 22·5, the highest 71·9, and at Bournemouth 20·0 and 80·0.

The cold experienced during March of 1883 was intense, and Mr. W. Marriott, in reading a paper before the Meteorological Society, drew attention to this fact by stating that this was the coldest March, with two exceptions, since 1789, and that the stations which, in March 1883, had the least number of frosts were Ilfracombe, Falmouth, Aberystwith, Llandudno, Helston, Swanage, Teignmouth, and Ventnor.

1881.

Lowest Temperature recorded during Year.	Highest Temperature recorded during Year.	Extreme Range.
Swanage . . . 12·7	81·7	69·0
Bournemouth . . 11·2	85·5	74·3

This year was quite exceptional, being the year of the great frost, when the temperature fell far below zero at many places in England; whilst, on July 15th of this year, greater heat was recorded than in the previous fifty years,—the heat at Wimbledon being registered at 97·0, whilst the temperature at Swanage was 81·7, and at Ventnor 81·6. By reference and comparing this with other places we see that these were the two coolest places in England on July 15th, 1881.

1882.

Lowest Temperature recorded during Year.	Highest Temperature recorded during Year.	Extreme Range.
Swanage . . . 22·5	71·9	49·4
Bournemouth . . 20·0	80·0	60·0
Torquay. . . . 22·5	72·6	50·1

During the above year it is a matter worthy of note that Swanage had the smallest extreme range on the south coast, except Falmouth, Ventnor, and Worthing.

1883.

Lowest Temperature recorded during Year.	Highest Temperature recorded during Year.	Extreme Range.
Swanage . . . 23·6	72·9	49·3
Southbourne . . 23·0	77·0	54·0
Torquay. . . . 23·9	75·2	51·3

This year Swanage had the smallest extreme range on the south coast, except Falmouth; but Bournemouth is not recorded in these tables, for the reason that, after 1882, no observations were taken there, and therefore we have inserted those taken at Southbourne.

MONTHLY AVERAGE FOR THREE YEARS OF MINIMUM TEMPERATURE AND OF AVERAGE DAILY RANGE AT SWANAGE.

	Average Minimum Temperature.	Daily Range.
1881.		
January (The Great Frost)	28·7	9·5
February (The Great Frost)	35·2	7·3
March	38·4	9·6
April	39·2	11·0
May	46·1	12·4
June	49·2	11·6
July	54·9	13·4
August	52·9	10·6
September	51·7	10·2
October	42·8	9·8
November	46·7	7·3
December	39·6	7·2
1882.		
January	38·7	7·1
February	39·9	7·7
March	41·2	9·3
April	43·1	10·2
May	46·3	11·3
June	49·9	11·1
July	54·0	8·4
August	53·9	11·1
September	49·0	11·9
October	47·9	8·9
November	41·2	9·0
December	38·4	7·1
1883.		
January	39·9	6·8
February	39·9	8·3
March*	32·7	10·1
April	40·7	10·2
May	45·0	11·1
June	49·8	11·4
July	52·5	9·5
August	54·3	11·0
September	52·9	7·7
October	47·2	8·1
November	41·6	8·8
December	38·1	7·2

During the first week of December 1889, when great cold was registered all over England, and excessive frost prevailed, we can give most satisfactory statistics from Swanage, which will

* In March this year was the excessive coldness to which we have above referred as being exceptionally frosty and cold throughout England.

bring the subject of Temperature up to date. East wind, we find, prevailed there as elsewhere during the week, but no frost either by night or by day. On December 4th it just touched freezing point (32), but the previous and following days of the week, when cold was excessive everywhere, the *lowest* temperatures were 38½, 37½, 37, 35, 36½, 35; consequently no snow fell as in London and elsewhere.

The Swanage Meteorological Readings were taken at the top of the hill on the Durlston estate, in the centre of an exposed field and 178 feet above sea level.

MEAN TEMPERATURE. (*Mean of Maximum and Minimum Temperature for the year* 1881.)

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Swanage . . .	33·5	38·8	43·2	44·7	52·3	55·0	61·6	58·2	56·6	47·7	50·4	43.2
Ventnor . . .	34·9	40·7	45·1	47·0	53·9	57·7	63·1	59·7	58·7	49·1	51·5	44·0
Torquay . . .	34·5	40·3	44·1	46·2	53·7	56·2	61·8	58·3	56·8	48·8	50·3	42·7
Bournemouth . .	32·3	38·8	43·8	46·6	53·4	56·3	62·5	58·8	56·3	47·1	49·3	42·0
MEAN MINIMUM TEMPERATURE.												
Swanage . . .	28·7	35·2	38·4	39·2	46·1	49·2	54·9	52·9	51·7	42·8	46·7	39·6
Ventnor . . .	29·4	36·1	39·3	40·7	47·1	51·5	56·2	53·2	53·5	44·1	47·8	40·1
Torquay . . .	29·1	35·8	38·2	39·2	45·7	49·7	53·6	52·4	50·1	43·7	45·9	38·2
Bournemouth . .	25·8	33·9	36·9	38·4	43·9	49·2	53·4	52·4	49·4	40·2	44·4	37·7
ACTUAL LOWEST POINT *touched in each month.*												
Swanage . . .	12·7	26·1	25·7	29·6	36·1	39·1	48·2	45·4	47·2	29·7	36·4	29·4
Ventnor . . .	14·9	26·4	27.4	29·8	38·3	39·4	50·2	45·3	48·1	31·7	39·0	30·7
Torquay . . .	15·6	24·7	21·7	28·8	38·9	38·9	47·0	48·0	44·9	29·3	35·9	27·8
Bournemouth . .	11·2	24·5	24·0	28·0	31·6	36·9	41·1	43·4	41·8	26·5	30·3	27·6
MEAN RANGE *of Temperature.* (*Daily difference between* MINIMUM AND MAXIMUM *Temperature.*)												
Swanage . . .	9·5	7·3	9·6	11·0	12·4	11·6	13·4	10·6	10·2	9·8	7·3	7.2
Ventnor . . .	11·0	9·2	11·5	12·7	13·6	12·3	13·9	11·0	10·3	10·1	7·3	7·8
Torquay . . .	10·8	9·0	11·8	13·9	16·0	13·1	16·4	11·7	13·4	10·3	8·7	9·1
Bournemouth . .	12·9	9·9	13·8	16·3	19·0	14·2	18·2	12·8	13·9	13·7	9·9	8·5
EXTREME RANGE. (*Difference between Actual Lowest and Actual Highest Point touched each month.*)												
Swanage . . .	35·6	22·8	32·9	28·4	36·0	35·9	33·5	23·6	21·5	31·1	21·2	23·9
Ventnor . . .	35·7	26·7	32·5	32·7	35·9	35·2	31·4	29·2	22·6	30·0	21·5	24·2
Torquay . . .	35·1	27·0	38·3	31·7	35·7	42·2	37·1	26·6	25·7	32·2	24·1	25·4
Bournemouth . .	39·5	27·6	37·7	34·7	43·3	38·4	44·4	26·2	26·9	35·4	30·0	26·3

The following conclusions I have arrived at from the perusal of the Meteorological Society's Reports.

1. That Swanage, Isle of Purbeck, Dorset, is situated eight miles south of Bournemouth and sixteen miles west of the Isle of Wight.

2. That the winter at Swanage is dry, mild, equable, and bracing.

3. That it is surrounded by the sea on three sides.

4. That it is protected from land and sea fogs, on the north by the Purbeck hills, on the south and west by the Channel cliffs.

5. That the temperature during four months of winter, *i.e.* November to February, the mean daily maximum is 48·1°; the mean nightly minimum is 40·5° (two consecutive years' observations).

6. That in the four winter months the daily range of temperature is 7·6°, being the smallest range of any health resort of the south coast, from Dover to Land's End, including the Isle of Wight and Guernsey. The *annual* daily range stands at the remarkably low record of less than 10°.

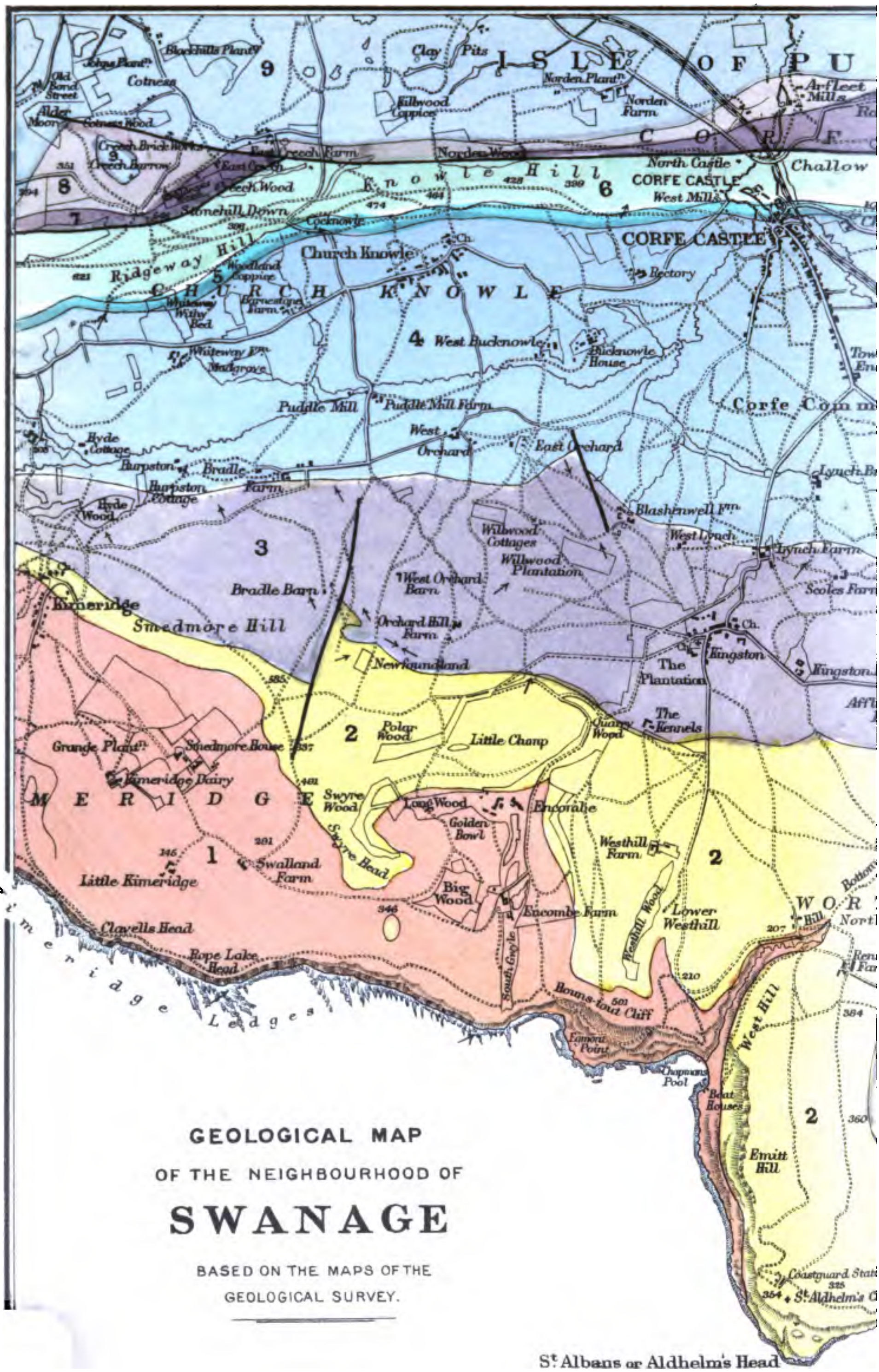
7. That it is favoured with 36 per cent. of possible sunshine in four winter months.

8. That the average annual rainfall is from 28 to 29 inches. In the dry year 1887 it was 22·50 inches, and this year (1889) 23·55 only.

9. That the average of mortality during ten years from 1875 to 1886 was 14·93 per 1,000.

10. That it has the coolest and least range of temperature of any place on the south coast during the summer months.

These statements are indisputable, and prove beyond doubt that Swanage must be regarded as a most excellent health resort. I cannot conclude without expressing my great admiration of the way in which Mr. Burt has opened out this place, and made it so desirable, so far as artificial work can do, for invalids. Nature has done her part here, and all that human aid can do has been done to further the healthiness of the situation at the hands of this indefatigable gentleman, to whom the town must owe a lasting debt of gratitude—whose sole desire in life is to further the welfare and health of the place, if this is possible, for the benefit of humanity in general.



GEOLOGICAL MAP

OF THE NEIGHBOURHOOD OF

SWANAGE

BASED ON THE MAPS OF THE GEOLOGICAL SURVEY.

THE GEOLOGY OF SWANAGE.

By HORACE B. WOODWARD, F.G.S.,

Of the Geological Survey of England and Wales.

THE ancient history of the earth is written in the rocks which form the ground on which we live. Hence any spot, whether brick-yard, gravel-pit, or quarry, where the rocks are exposed to view, must be of interest to the geologist. Far more interesting must be the cliffs along our coasts, where we can clearly follow up these records and trace the sequence of events; and Swanage is indeed well situated for the students of geology. The beds of rock, or strata, which form, as it were, the pages of geological history, stand out boldly, and contain within themselves those records of ancient life and physical condition which it is the chief object of the geologist to decipher.

To the uninitiated the cliffs are picturesque enough, and the variations in their stony structure serve but to lend diversity to their forms. The visitor cannot fail to observe the dark shales of Kimmeridge, the rugged rocky cliffs of St. Aldhelm's (St. Alban's) and Durlston Heads, the sands and crimson-coloured clays of Swanage Bay, and the white chalk cliffs of Handfast Point.

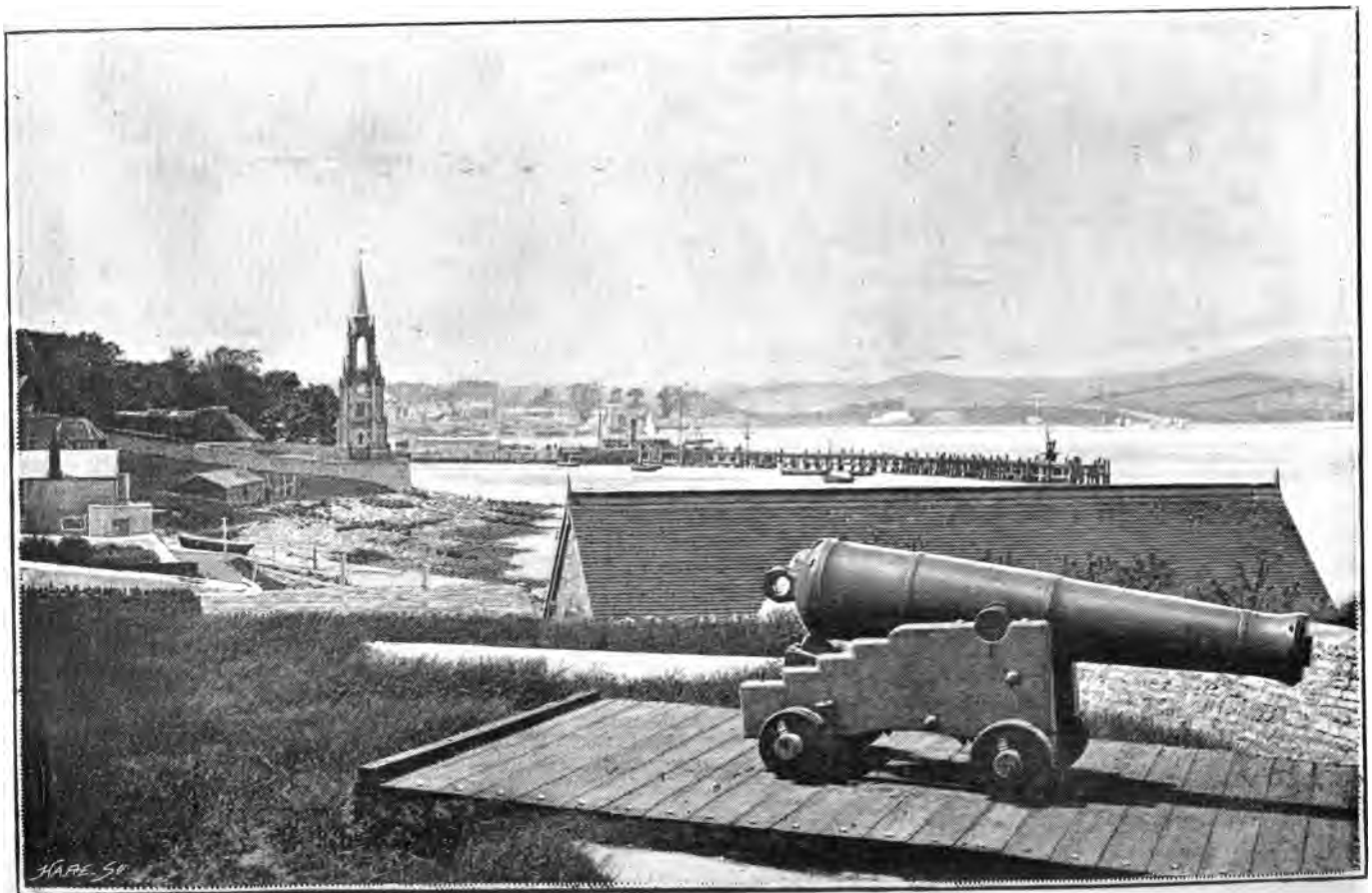
The geologist, too, is ready enough to admire the modern features; while he sees, in the waste of the coast-line, and in the mineral matter transported by streams and rivers, the work of geological agents whose continuity through past ages has been broken only over limited areas of the earth's surface. It is not sufficient for him to find shale here, or chalk there, and sand at another place. He must determine their relative position, and the position they occupy in reference to other strata that compose portions of the earth's crust. He must unearth the fossil forms of life entombed in the strata. Nor is it sufficient to frame tables of strata and lists of species with hard-sounding names. These

are but the bald facts from which deductions may be made. The aim of the geologist is to restore in imagination the conditions that have occurred in the past, and that lead up to the life, climate, and scenery of the present. This he is enabled to do by utilizing the knowledge (acquired by many observers) of the present distribution of life on the surface of the earth and in the waters, and of the various sedimentary and other accumulations laid down on the beds of seas, rivers, and lakes. Then comparing the past with the present an accurate general notion may be gained of the physical history of various bygone periods.

Of the many periods into which geological, like human, history is for convenience divided, Swanage furnishes materials for some important chapters. Indeed, among its strata we find the Kimmeridge clay and the Purbeck beds taking their names from the very district we purpose to describe. The story unfolded is full of interest, and although, excepting in its latest chapters, the geology of Swanage has no direct connection with human affairs, yet indirectly, in the economic products which are yielded by the rocks, the subject is associated with the every-day life of many individuals. Nor can those who attempt to read the history of the rocks divest themselves from the interest imparted to the district by its associations with the geologists of old,—Webster, Fitton, Mantell, Edward Forbes, and Bristow, not to mention the names of living geologists to whose researches we are so much indebted.

The student commencing work in the region of Purbeck should first make himself acquainted with the order of succession of the rocks; and as in some places the cliffs ars quite inaccessible by land, it is desirable first of all to take a general view of them with the aid of a boat.

Commencing at Kimmeridge Bay, we find a series of dark and iron-stained shales, with layers of cement-stones or septaria. This is the KIMMERIDGE CLAY which forms the cliffs for some distance along this part of the coast, and stretches along the foreshore in a broad and slippery pavement. The cement-stones where they occur near the sea-level form the Kimmeridge Ledges, that serve partially to protect the coast-line, and indeed account for the irregularities which form the bay. Rolled pebbles of these septaria are scattered along the beach, while the crumbling away of small portions of the shale above occasionally reminds the



BATTERY, PEVEREL POINT.

pedestrian in an uncomfortable manner of the waste of the cliffs by meteoric agencies. Springs issue at numerous points along the cliffs, and an occasional stream descends in the form of a cascade. The strata are displaced by numerous faults, doubtless produced during the upheaval of the strata; for the Kimmeridge Clay in the Bay occurs in an arched or anticlinal form, overlaid westwards in Gad Cliff and eastwards at Encombe and other places by succeeding deposits.

Proceeding eastwards from Kimmeridge Bay, past Hen Cliff (surmounted by Clavell's Tower), and past the "coal-works," we may notice that the general dip or inclination of the dark shales is towards the east; indeed, they finally disappear beneath the sea-level below St. Aldhelm's Head. They are, however, covered at Encombe, Emmet's Hill, and St. Aldhelm's Head by grey and greenish-coloured sands and loams, that contain large masses of calcareous sandstone. These blocks, which possess a rounded appearance, are simply portions of the sands cemented here and there by carbonate of lime. There is a gradual passage upwards from the Kimmeridge Clay through dark sandy clays into this newer series, which goes by the name of the PORTLAND SANDS.

Still higher, and capping the same hills at Encombe and eastward, we may discern a group of dark-brown ragged-looking cherty rocks, and above them lighter freestones, that together constitute the PORTLAND STONE. It is these hard rocks which form the rugged coast westward at Gad Cliff, and the iron-bound coast from St. Aldhelm's Head to Durlston Head: a coast that furnishes many a melancholy record of shipwreck, but which presents a grand appearance and a formidable front to the angry seas of the Channel. Passing along this portion of the coast we may notice several stone-quarries, and some natural caverns and fissures in the rocks, while here and there near the lighthouse, and again at Durlston Head, dislocations of no great magnitude may be seen to have affected the rocks. Thin and somewhat irregular and undulating layers of grey stone may be noted in places to overlie the more regular beds of Portland stone—the upper portions of the latter being usually paler in tint. These thin beds form the base of the succeeding Purbeck Beds, in which especial interest may be said to centre in this district. The overlying portions of these Purbeck Beds are concealed beneath the turf in the pleasant grassy slopes that rise above the cliffs.

Rounding Durlston Head we come in sight of the cliffs that extent to Peverel Point, close to Swanage, and these are almost entirely formed of PURBECK BEDS. Here the more rapid denudation of the softer Purbeck strata has given rise to Durlston Bay. Less picturesque and less grand than the Portland rocks, the Purbeck strata have the advantage in this region of being accessible on foot, and they constitute one of the celebrated hunting-grounds of the geologist. The cliffs do not present a clear unbroken series, for the strata, while dipping generally towards Swanage, are dislocated and repeated in several places. The Portland stone occurs at the base of Durlston Head, overlaid by somewhat shattered Purbeck strata; but the junction is not easy to determine, owing to the tumbled masses of rock, and to the fact that the Portland stone presents a rough scoriaceous appearance, and is much covered by limpets, periwinkles, and barnacles. The fault previously noticed on the other side of Durlston Head is again intersected by the cliffs, and the tract adjoining the headland is a good deal obscured by slips. Not until we pass the zigzag path below the Refreshment House can we clearly trace the upward succession of the Purbeck Beds, from the lower, through the middle, to the upper division of these strata. When once the succession of beds has been studied in detail the student will be able to recognize the disconnected portions visible here and there in the southern part of these cliffs. A considerable fault has thrown the Middle Purbeck Cinder Bed and other strata against the Lower Purbeck Beds on the north side of the zigzag; these latter beds consist for the most part of grey marls, with occasional masses of gypsum or alabaster. Undulations and slight dislocations affect the beds here and there as we trace them along, but two dark bands are conspicuous among the strata above the soft grey and yellow marls of the Lower Purbeck Beds. The lower and rather lighter band is that known as the Dirt Bed or Mammal Bed, to which attention will be again directed. But it may be mentioned here that where this Dirt Bed comes to the surface in the cliff to the north of the Refreshment House, an excavation, known as Beckles' Cutting, was made many years ago in search of the fossils for which the bed is noted.

The Dirt Bed marks the base of the Middle Purbeck Strata, which comprise a series of blue and grey stone beds, including the famous Swanage Stone and the Cinder Bed, overlaid by dark

DURLSTON BAY AND PEVEREL POINT.

clays. Approaching the Flag Staff the Middle Purbeck Beds are overlaid by beds of shelly stone and clay that have a brown appearance. These again are faulted and disturbed as we proceed onwards to Peverel Point, where we find beds of the celebrated Purbeck Marble in the cliffs and in the ledges that stretch into the sea, and form a protection to this part of the coast.

Continuing our journey we pass the town and harbour of Swanage, which serve to obscure the junction of the Purbeck Beds with overlying strata; but those who wish to study the relations of these beds can do so at Mewps Bay, on the coast a few miles west of Kimmeridge. There a gradual passage is shown to bind the formations together.

Swanage Bay has been hollowed out in a series of yellow sands, variegated clays, and shales, that overlie the Purbeck Beds —dipping likewise towards the north. Occasional bands of grit and masses of lignite may be noticed in this division, which is known as the WEALDEN BEDS, including representatives of the Hastings Sand and Weald Clay. As we proceed we may note repeated alternations of the red clays and yellow sands, the latter of which have helped to form the welcome sandy shore that borders the Bay.

Now we reach Punfield Cove, at the foot of Ballard Down, and here, crowded as it were in a small geographical compass, are several geological divisions, whose position is unfortunately much obscured by slips.

The upper portion of the Wealden Beds comprises a series of shales, and these are overlaid by blue clays, laminated beds of sand and clay, and ferruginous sandy beds, classed as LOWER GREENSAND. Higher still in position are the dark blue and bluish-green sandy clays known as GAULT; and then come green and yellow sandy beds, with harder bands or nodules of stone, classed as UPPER GREENSAND. All these groups of strata underlie the CHALK which now rises in the bold hill of Ballard Down, part of Purbeck Hill, and is abruptly cut off in the cliff, which rises about two hundred and sixty feet above the sea-level. The dip of the chalk is almost vertical for some little distance. Then a remarkable fault is shown, which brings a curved and gently undulating mass of chalk abruptly against and over the highly inclined beds, as if the former had been forced over the latter; indeed, the fault

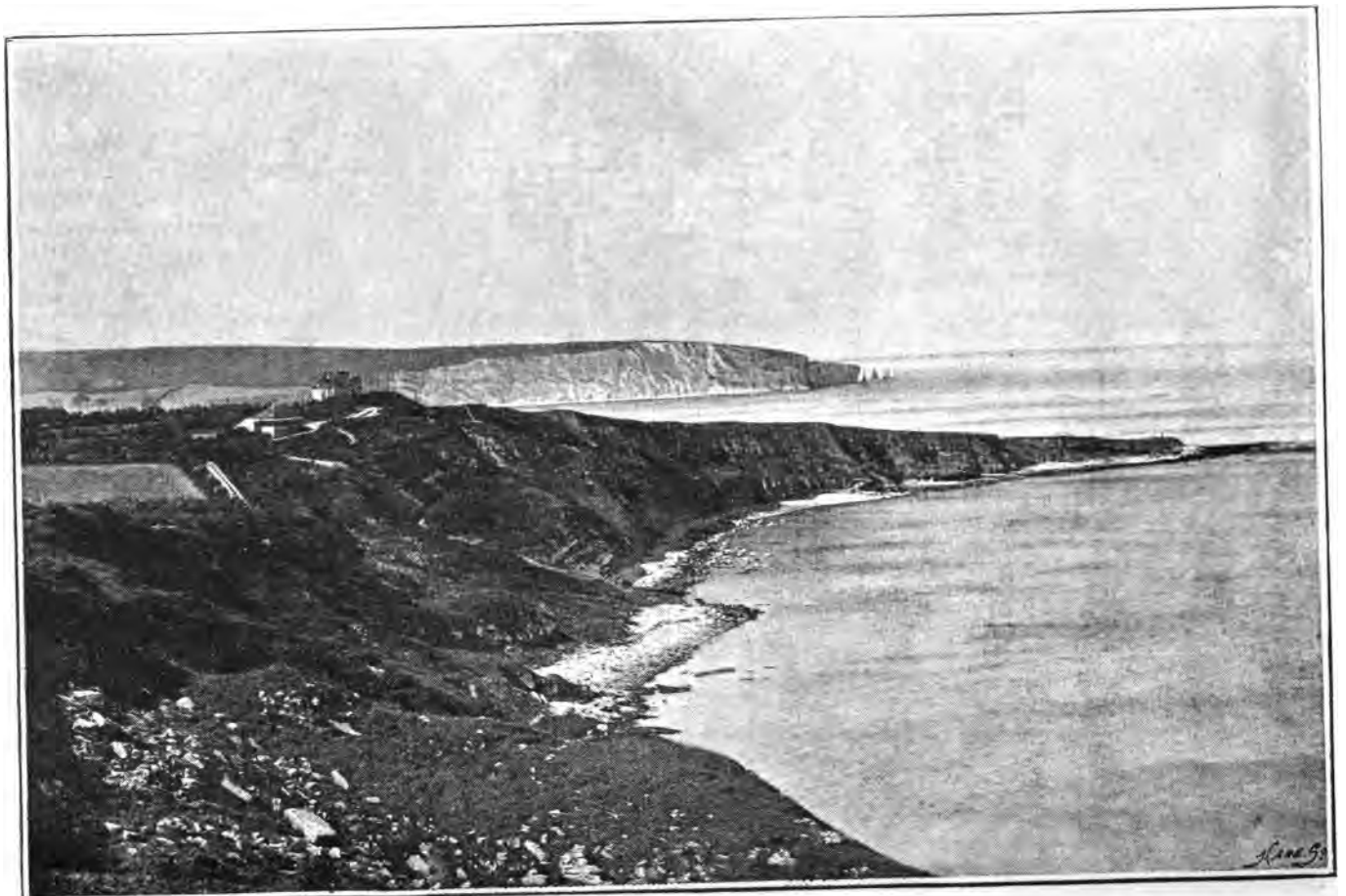
in part of its course coincides with the lines of stratification of the higher beds of chalk. An admirable picture of it, drawn by Thomas Webster, is published in Englefield's great work on the Isle of Wight. We pass several detached pinnacles of chalk, the most conspicuous of which are known as Old Harry and his Wife, the former about one hundred feet high; there are also several large caves in the chalk.

Near the Foreland the chalk is much jointed and fissured, giving the rock a buttressed appearance, features which have led to the formation of the isolated pinnacles. Proceeding towards Studland Bay, where the bedding is apparently horizontal, although the chalk is somewhat faulted in places, we come to the southern corner of Studland Bay, where the Eocene strata overlie the chalk. The surface of the latter formation is furrowed or "piped" at the junction with the READING BEDS. The lowest beds of this formation are much charged with ferruginous matter, and they contain green-coated chalk-flints.

The LONDON CLAY is much obscured, and we soon pass to the LOWER BAGSHOT BEDS, shown at Studland in cliffs of pipe-clay and sands, the latter brightly coloured like those of Alum Bay in the Isle of Wight. Beyond, the coast line is fringed by Blown Sands, and not until we have proceeded some distance past the mouth of Poole Harbour do we again find the strata exposed in the cliffs. The beds there have yielded many interesting fossils, but lie beyond the region of Purbeck.

The following sequence in the strata is thus established :—

TERTIARY.	EOCENE.	Lower Bagshot Beds. London Clay. Reading Beds.
SECONDARY.	UPPER CRETACEOUS.	Chalk. Upper Greensand. Gault.
	LOWER CRETACEOUS or NEOCOMIAN.	Lower Greensand. Wealden Beds.
	UPPER OOLITIC or UPPER JURASSIC.	Purbeck Beds. Portland Beds. Kimmeridge Clay.



SWANAGE AND DURLSTON BAYS, WITH OLD HARRY ROCKS AND PEVEREL POINT.

Having thus ascertained the relative position of the strata on the coast, the student will readily follow their extension inland. The general dip being to the north, and the strike east and west, we traverse newer and newer beds as we proceed from the south coast northwards across the Purbeck district. Two ridges or escarpments form the more marked features. The southern of these is formed by the Purbeck Beds, and the northern by the chalk range, which rises to elevations of four or five hundred feet. Between them is a vale hollowed out of the softer Wealden strata, while north of the chalk range is a plain, described by some writers as a "dreary waste," formed of Tertiary sands and clays.

Thus the features inland, like those on the coast, are largely due to the alternation of harder and softer rocks, on which the agents of denudation have expended their forces.

The student will now naturally be desirous of investigating the strata more fully, and of finding some of the fossil treasures that may be stored up in them.

Fossils may be found at any spot in the Kimmeridge Clay, in the cement-stones as well as in the shales. Some of the specimens are partially replaced or coated by iron pyrites, and most of them are very much flattened, as is usual in shale that has undergone much compression from strata now or formerly overlying it. A favourite spot for collectors is Chapman's Pool, on the coast below Renscombe.

Among the fossils that may be obtained at various points along the coast are *Ammonites biplex*, *Aptychus* (or *Trigonellites*) *latus* (considered to be the operculum of Ammonites), and several species of *Belemnites*. Many delicate bivalves, such as *Cardium striatulum*, *Lucina minuscula*, *L. lineata*, *Avicula*, and *Exogyra virgula* are to be found; also univalves, such as *Natica*, *Alaria*, and *Cerithium*. The Brachiopods include *Lingula ovalis* and *Discina latissima*, and the Crustacea are represented by *Pollicipes*. Insects are rare, so are Echinoderms, Corals, and Plants. Foraminifera may be obtained by those who care to wash the clay and extract these minute objects from the residue.

More striking are the vertebrate remains. Of Fishes we find the forms known as *Asteracanthus*, *Gyrodus*, *Hybodus*, *Lepidotus*, *Pycnodus*, and *Sphærodus*, but we have usually to be content with the discovery of fin-spines, palatal teeth, and scales. Many remains of large Saurians, such as *Pliosaurus*, *Plesiosaurus*, and

Ichthyosaurus have been obtained, mainly through the energy of Mr. J. C. Mansel-Pleydell. A paddle of the *Pliosaurus*, six feet in length, is to be seen in the Dorchester Museum.

Crocodiles, known as *Dacosaurus* and *Steneosaurus*, together with the Dinosaur *Ornithopsis* and the *Pterodactyl*, have also been obtained. Many of the Saurian remains have been described by Mr. J. W. Hulke.

It is thought that the hydrocarbons in the "coal" or bituminous shale of the coast may be due to the putrefaction of animal matter. The best bed or "Blackstone" is a dense bituminous shale, worked together with ten or twelve feet of other beds in the cliff at Little Kimmeridge. The composition of the Blackstone is about 61 per cent. of volatile matter, 13 of carbon, and 26 of ash. This Black bed has from early times been employed as a fuel by the cottagers, although the smell is decidedly unpleasant. During the past forty years efforts have been made to utilize the Kimmeridge shale by distillation; its products being naphtha, pitch, lubricating oil, disinfectants, and manure. No great success has, however, attended the enterprises, partly no doubt owing to the expense of carriage to and from Kimmeridge.

The lowest beds of the Kimmeridge Clay are not exposed at Kimmeridge. To see them we must journey a long distance westwards to Ringstead Bay. There the lower beds may be seen reposing on the Corallian rocks; they yield *Ostrea deltoidea*, *Rhynchonella inconstans*, and other forms not found in the higher beds. It was in that neighbourhood that spontaneous combustion of the cliffs took place in 1826, owing to the decomposition of iron-pyrites, and the consequent ignition of the bituminous shale.

The Kimmeridge Clay is about 1,000 feet in thickness, though a thickness of no more than 650 feet is seen at Kimmeridge. It is one of the most persistent formations in this country, presenting similar characters throughout its extent from Dorsetshire through the country to Lincolnshire, and to the Yorkshire coast bordering the Vale of Pickering. In the neighbourhood of Kimmeridge it forms a fertile tract of grass-land. Formerly there were alum-works at this locality, and the cement-stones of Broad Beach were employed for making cement, being sent over to Medina, in the Isle of Wight.

The Portland Sands do not constitute a rich field for the collector, nor are the fossils usually well preserved. *Ammonites*,

Pecten, Trigonia, Mytilus, Exogyra, Thracia, and other forms may be found.

There is a good exposure of the beds under Gad Cliff, but the pedestrian may be warned not to proceed westwards along this coast in the hopes of reaching Worbarrow Bay. Not many would be tempted to proceed very far, for there is no track-way, and progress has to be made over and between huge tumbled blocks of rough rock; finally, there is no means of reaching the cove by Worbarrow Knob, as the sea dashes up against the cliffs for some distance east.

The Portland Sands are shown at Encombe or West Hill, and again at Emmet's Hill and St. Aldhelm's Head. The thickness of the sands is from 150 to 180 feet, but there is no definite boundary for them with the overlying and underlying strata.

Swyre Head, one of the highest points (667 feet), consists of Portland Sands surmounted by the cherty beds that form the base of the Portland stone. The Portland beds generally are characterized by steep slopes at their outcrop, and the tract occupied by them is mostly grass-land adapted as pasture for sheep.

The Portland Stone-beds comprise, in descending order:—

Fine-grained and shelly limestones	12 to 18 feet.
Oolitic limestones (including beds of freestone)	25 „ 30 „
Cherty Beds	60 „ 75 „

The uppermost beds comprise a fine-grained limestone known as the Shrimp-bed (which is seen at Windspit quarry, south of Worth), and an Oyster-bed, with *Perna Bouchardi* (well shown at Tilly Whim). Casts of *Trigonia* occur in some places in the upper beds, as well as *Pecten lamellosus.*

The freestone occurs sometimes in two layers separated by poorer stone, and varies from six to ten feet in thickness. *Trigonia gibbosa* occurs in these beds. Inland the freestone has been worked at the London Doors Quarry near Encombe House, where the beds are much shattered.

Below the freestone group comes a great thickness of sandy and cherty limestones, which yield large specimens of *Ammonites giganteus.* Examples of this fossil three feet or more in diameter are sometimes obtained in Portland, where they are known to the quarrymen as "Conger Eels."

The Portland Stone-beds may be studied at Tilly Whim and

in quarries that have been opened along the coast westward to St. Aldhelm's Head. Among these are the Dancing Ledge quarry, so named on account of a large platform of cherty limestone, over which the breakers dash. There are also the Headbury, Seacombe, and Windspit quarries.

In some localities remains of *Plesiosaurus*, *Pliosaurus*, and *Chelone planiceps* have been obtained from the Portland Stone; also the fishes *Lepidotus* and *Pycnodus*. The famous Tisbury Star-coral *Isastræa oblonga* has been obtained from cherty rock at Gad Cliff, but it is far from abundant in this locality.

Plants (*Araucarites*) have been occasionally found in the Portland Beds.

The Purbeck Beds at Durlston Bay and Swanage have been subdivided as follows by Edward Forbes and H. W. Bristow :—

UPPER PURBECK BEDS. 60 feet.	Upper Cypris Clays and Shales.	Clays with bands of shell-limestone (Purbeck Marble).
	Unio Beds.	Clays with bands of limestone; remains of Crocodile, Turtle, Freshwater shells.
	Upper Broken Shell Limestone.	Soft Burr Stone, made up of comminuted shells.
MIDDLE PURBECK BEDS. 163 feet.	Chief "Beef" Beds.	Dark Shales with fibrous carbonate of lime (Beef) and beds of limestone.
	Corbula Beds.	Bands of limestone, shale, and marl.
	Scallop Beds.	White Roach Limestones.
	Intermarine Beds.	Upper Building Stones, with Turtle, Fish-remains, etc.
	Cinder Bed.	Hard earthy bed full of *Ostrea distorta*.
	Cherty and Marly Freshwater Beds.	Lower Building Stones.
		Limestone, with irregular nodules of black chert or flints.
		Limestones and Marls.
		Black clay band.
		Limestones and Marls.
		Dirt Bed with Mammals.

LOWER PURBECK BEDS. 162 feet.	Marly Freshwater Beds.	Hard and soft Marls and marly limestones.
	Soft and Hard Cockle Beds.	
	Cypris Freestone.	Soft shales and impure limestone.
	Broken Bands.	Bituminous and sandy limestone.
	Soft Cap.	Brown and botryoidal limestones.
	Hard Cap.	

The total thickness of the Purbeck Beds at Swanage is thus estimated at about 385 feet. Westward the thickness is considerably less, and the beds vary much in character, for the lower strata, so soft in Durlston Bay, furnish hard building-stone near Upwey, north of Weymouth.

The Lower Purbeck Beds are of least interest near Swanage. They yield numerous *Ostracoda* (Cyprides), and are especially characterized by the form known as *Cypris Purbeckensis*. They contain masses of gypsum, which were formerly collected for trade purposes. A remarkable feature in the lower Purbeck Beds is the band of Broken Beds, met with in different places along the coast in about the same position as regards the series of strata. They have been described by Mr. Bristow as "Thin slaty beds of bituminous, sandy limestone much broken and squeezed together, with a few broken fragments of chert." The appearances are probably due to meteoric agencies, leading to dissolution and shattering of portions of the beds.

The Middle Purbeck Beds furnish many interesting fossils, but those of the highest interest have come from the Dirt Bed at their base. At least twelve genera and twenty-two species of Mammals have been obtained. Although of small, even diminutive size, they have been given long and uncouth names, such as *Spalacotherium*, *Triconodon*, and *Plagiaulax*. They are Marsupial animals, insectivorous and herbivorous. They are by no means abundant, and long and patient search unfortunately often goes unrewarded.

The earliest specimens were obtained in 1854 by Messrs. W. R. Brodie and Charles Wilcox, and two years later Mr. S. H. Beckles obtained a number of additional forms. These have been described by Sir Richard Owen and Dr. H. Falconer. Such remains have been very exceptionally preserved in our strata.

The earliest known Mammals are found in the Rhætic Beds, others occur in the Stonesfield Slate, and none again until we reach the Purbeck Beds. No traces whatever of birds have been found, hence it is to be hoped that the discovery of some remains of these animals may reward the zeal of those who work at the Swanage strata.

The Dirt Bed is a layer, about one foot thick, of black and brown carbonaceous shale, that lies on top of the lower Purbeck Marls, and appears to fill inequalities in the bed below. Mr. Bristow has recorded from it *Cyprides*, also *Valvata*, *Paludina*, *Rissoa*, *Physa Bristovii*, *Limnæa*, *Planorbis*, and some reptilian remains.

This bed must not be confused with the great Dirt Bed of Portland, that occurs just above the Cap Beds, near the base of the Lower Purbeck Beds, and yields remains of Cycads and Coniferous trees. These plant-remains have not been traced in position far eastward of Lulworth.

The bed with "flints," which comes just below the mass of the middle Purbeck Stone-beds has yielded at Lulworth remains of a freshwater Sponge. This has been named by Mr. J. T. Young *Spongilla Purbeckensis*.

Among the fossils from the Purbeck Beds the Saurian remains are important. The Dinosaurs include *Iguanodon* and *Nuthetes;* then we have the "Swanage Crocodile," which has the formidable name of *Goniopholis crassidens*, and the dwarf Crocodiles known as *Nannosuchus* and *Theriosuchus*. Sir Richard Owen estimates the average length of a mature *Theriosuchus* at eighteen inches. Turtles, very fine and large, have been obtained mostly from the quarrymen as they occur in the stone-beds: they include *Tretosternum*, *Pleurosternum concinnum*, *P. Bullocki*, and *Chelone obovata*, some fine specimens of which are preserved in the museum at Corfe Castle. The fishes include *Asteracanthus verrucosus*, *Hybodus*, *Lepidotus*, and *Pholidophorus*, and they are mostly found in the stone-beds worked at the quarries. The name "fishes' eyes" is given by quarrymen to the small black spherical teeth of *Lepidotus*.

Of Crustacea, the Isopod *Archæoniscus* occurs, but not in such abundance as it does in the Vale of Wardour. Other forms, the Ostracoda, occur in profusion in some beds: of these, *Cypridea granulosa* and *C. punctata* characterize the middle and upper Purbeck beds respectively.

Insects are represented very fully by remains of Coleoptera, Orthoptera, Diptera, Neuroptera, and Hemiptera. To the various remains very numerous names have been applied by Professor Westwood. The Mollusca include freshwater forms such as *Limnæa, Menalia, Paludina elongata, P. carinifera, Physa Bristovii, Planorbis, Corbula alata, Cyrena, Cyclas,* and *Unio;* and marine forms such as *Avicula, Cardium, Modiola, Mytilus, Ostrea distorta, Pecten,* and (in the vale of Wardour) also *Trigonia.*

These Mollusca belong to living genera, and taken by themselves they give the Purbeck Beds a recent aspect. The Echinoderm *Hemicidaris Purbeckensis* was found in a layer associated with the Cinder Bed.

The Cinder Bed, so named on account of its rough cindery appearance, is such a well-marked layer that it is very useful as a guide to fix the position of the strata where they are disturbed. It attains a thickness of eight or nine feet, and is almost entirely made up of the small oyster *Ostrea distorta,* although it is not easy to procure any fine examples of this shell.

The Swanage Stone-beds are well shown on the coast, where they have been quarried in places. The Swanage stone is worked, chiefly by means of shafts, on the hill extending from the south of the town to near Langton Matravers. The beds are known as veins; thus, in the upper series, we have the Laning, Rag Beds, Freestone, and Downs Veins; and in the lower, beneath the Cinder Bed, the Cap and Feather and the New Vein. There are nearly a hundred stone-mines in the Swanage district.

A building-stone, obtained at the base of the Upper Purbeck Beds, was used in erecting the old tower of Swanage Church. This is a compact sandy limestone, made up originally to a large extent of comminuted shells, but the shelly matter has mostly been dissolved out, leaving cavities. It is called the Burr stone.

The Purbeck Marble naturally attracts attention. Good specimens may readily be procured near Peverel Point, and it is occasionally quarried inland, as at Easton, near Langton Matravers, at West Orchard, and Woody Hyde, south of Corfe Castle. Although so extensively quarried in old times along its outcrop, between Swanage and Worbarrow Bay, the quarries were practically abandoned at the beginning of this century, probably

much earlier, the introduction of other kinds of marble having ruined the local trade. The solid rock is grey, being coloured by carbonate of iron, and this is often rusted on the outside. The interior of the *Paludina* shells which form the mass of the rock is often filled with green matter. The *Unio*-bed also is usually much tinged with green colouring-matter.

The Purbeck Beds form rather a bare district, the fields being divided by stone walls, varied only by an occasional hedgerow, and having but few trees. The area occupied by the Lower Purbeck Beds is that chiefly devoted to arable cultivation.

The Wealden Beds do not yield many fossils, but *Cyrena*, *Paludina elongata*, and *Unio* have been recorded. Bones of *Iguanodon* have also been obtained, as well as masses of lignite. The beds form an undulating tract with long ridges. The higher portion of the series above the sands and red clays consists of shales with *Cyprides*, beds which no doubt occupy the position of the Weald Clay of Kent and Sussex. The total thickness of the beds has been estimated at 1,800 feet.

The Wealden Vale is for the most part a cultivated and well-timbered tract, divided by hedgerows, and with only occasional stone fences.

The Lower Greensand comprises a series of beds, considered to be about two hundred feet thick. The lowermost portion, consisting of a gritty band (Perna Bed), and of red and blue clays, is regarded as on the horizon of the Atherfield Clay of the Isle of Wight. It contains remains of the lobster *Meyeria* or *Astacus Vectensis*, together with *Exogvra sinuata*, *Area Raulini*, *Cardium subhillanum*, etc.

Higher still we find a marine-bed with *Ammonites Deshayesii*, *Cardium*, *Ostrea*, and *Mytilus* at the base of a thick mass of laminated sands and clays. At one time these beds were separated from the Lower Greensand under the name of the Punfield Beds, but it is now known that in this district they are a portion of the Lower Greensand, whereas the so-called Punfield Beds of the Isle of Wight belong to the Wealden series. The highest beds of the Lower Greensand consist of grey clays and ferruginous sandy beds, yielding *Exogyra sinuata*, and *Panopea neocomiensis*.

The Gault appears near Punfield Cove as a dark bluish-green sandy clay. It is seen on the foreshore, but few fossils have

been recorded from it. Its thickness is about one hundred and ten feet.

The Upper Greensand is about fifty feet thick, and is more attractive to the collector than the Gault. Its grey and green sands and nodular stone-beds yield *Pecten asper, P. orbicularis, P. quadricostatus, P. quinquecostatus, Exogyra conica, Terebratella pectita, Siphonia tulipa, and Vermicularia concava;* and in the lower clayey beds there have been found *Panopea plicata, Cucullæa glabra,* etc.

The fossils are many of them fragile. We miss the development of chert-beds which occur in the upper part of the series in the Isle of Wight, and further westward in Dorset and Devon.

Above the Upper Greensand we come to the chalk, dipping northward at an angle of 60°, and soon becoming almost vertical on the northern side of Swanage Bay. The lowest bed, often designated the Chloritic Marl, is here a bluish-grey marly bed with green grains of glauconite (hydrous silicate of iron, potash, and alumina), together with quartz grains and phosphatic nodules. This is but four feet thick, and has not proved to be rich in fossils, as it is in some places near Chard, and again on the coast near White Nore, on the borders of Ringstead Bay. It contains fish-remains (*Otodus*), also *Nautilus, Ammonites varians, Scaphites, Terebratula semiglobosa, T. biplicata, and Rhynchonella Mantelliana.* Higher up we come upon beds of evenly bedded bluish-white marly chalk, known as Chalk Marl and Grey Chalk, one hundred and thirty to one hundred and forty feet thick. These beds are extensively worked at Knowl Hill, west of Corfe Castle, for the manufacture of Portland Cement. Among the fossils *Nautilus, Ammonites navicularis, Ostrea vesicularis, Plicatula, and Discoidea subuculus* have been found. Remains of sponges (*Brachiolites*) have also been recorded. Higher still we find hard bedded white chalk, about one hundred and ten feet thick, grouped as Middle Chalk, and containing near the base a band known as the Melbourn Rock. Above this division there is a layer known as the Chalk Rock (about four inches thick) which contains hard green-coated nodules.

Then comes the mass of the chalk with flints, although the uppermost chalk contains few flints. It has yielded *Belemnitella, Terebratula,* etc., but fossils are far from abundant.

Much of the chalk is exceedingly hard. It has been opened

up in the railway cutting near Corfe Castle, and in that neighbourhood has been quarried for road-metal. On the coast one needs a boat for the proper examination of the chalk cliffs.

The physical features, with the detached rocks and inclined strata, naturally recall the Needles and Culver Cliff in the Isle of Wight, and suggest the connection of the two areas in comparatively recent geological times. Notable changes have taken place within the memory of man, for it is recorded that about one hundred and twenty years ago a man could creep along a narrow path from the mainland to Old Harry.

Passing on to the Eocene strata, we find the lower beds so masked that our attention cannot well be concentrated upon them. The Reading Beds consist of brown conglomerate and red and mottled plastic clay, together with white and yellow sands, and these are overlaid by the London Clay, ferruginous sandy clay with nodular concretions of ironstone. The beds dip northwards as before. Then we come upon the yellow and red sands of the Bagshot Beds and the pipe-clays, together grouped as the Alum Bay Beds, and upwards of two hundred feet thick. These clay beds have yielded a number of fossil plants, including remains of fig-trees and fig-sycamores, *Aralia*, ferns, etc.

A richer series is found near Bournemouth, where higher beds, known as the Bournemouth Freshwater Beds, are exposed in the cliffs. These are buff, white, and pale grey sands, grits, and clays, very irregularly accumulated. The plants include remains of ferns, *Sequoia*, *Eucalyptus*, *Araucaria*, *Alnus*, *Populus*, etc.

The bright and variegated Bagshot sands were exposed in several cuttings on the railway between Wareham and Corfe Castle, and in character they present some resemblances to the variegated Wealden strata. Together with the white and other clays these Bagshot Beds are probably due to the denudation of granitic rocks, and they present many features in common with the Tertiary strata at Bovey Tracey in Devonshire, to which beds a similar origin may be attributed.

The clays are white, and sometimes mottled red and white; others are dark grey. They are dug extensively near Wareham, and have been used in the manufacture of china, encaustic tiles, earthenware, and in the production of alum. At Branksea the clay has been worked beneath the sea-level. At other places it is mined as well as dug.

At Matcham the potter's clay is eight feet thick, and has been worked beneath thirty feet of yellow and variegated clay, and an equal thickness of white sand overlying. The potter's clay often contains leaves, and beneath it a bed of lignite has been proved. At Nordon a bed of lignite seven or eight feet thick has been used as fuel by cottagers.

The Bagshot Beds are probably brought nearer to the chalk at this spot, adjacent to Corfe Castle, by the fault that is shown in the cliffs of Handfast Point. The remarkable conical hill of Creech Barrow rises above the chalk ridge to a height of upwards of six hundred feet, and is formed of the Bagshot Beds.

We have now examined the principal strata that form the country around Swanage, and may consider briefly their method of formation.

The Kimmeridge Clay is a marine mud, accumulated too far from land to be affected by coarse detrital material. The Portland Sands show that shallow conditions succeeded, land rising in the west, so that sands gradually replaced the clays. The Portland Stone is made up of calcareous mud or fine calcareous sand formed of rolled fragments of organic remains, and containing some radiate oolitic grains, and it was a comparatively shallow water marine deposit.

The Purbeck Beds mark changing conditions; freshwater limestones, botryoidal and tufaceous in character, like beds of travertine, are succeeded in places by evidences of land vegetation in the now silicified remains of Cycads and Conifers. The beds indicate that after the freshwater and terrestrial conditions, which may have been marked by a lake or series of lagoons, a sudden irruption of the sea in Middle Purbeck times allowed the incursion of marine forms like the *Pecten*, *Avicula*, and *Hemicidaris*. These were succeeded by a gradual change from brackish to freshwater conditions in Upper Purbeck times, when the *Unio*, *Physa*, *Valvata*, *Paludina*, and *Planorbis* flourished.

The freshwater Purbeck Beds were succeeded gradually by the great accumulations of Wealden strata formed by river agency, but whether distributed over the bottom of a huge lake, or as a delta deposit, is a somewhat debatable subject.

Following these freshwater beds we have evidence of considerable changes in the succeeding strata, accompanied by evidences of unconformable overlap as we pass westwards. The Lower

Greensand presents evidence of comparatively shallow-water marine conditions, followed by the deeper water clays of the Gault. Then we have evidence of shallower sea conditions in the Upper Greensand, and again of deeper sea accumulations in the chalk. A considerable break is now evidenced. The succeeding Eocene deposits tell again of marine conditions, or of marine and estuarine conditions (Reading Beds and London Clay), which gradually gave place to the freshwater deposits of the Lower Bagshot Beds. Some of the organic remains in these Lower Eocene strata indicate tropical conditions, as in the case of the London Clay, but the plant-remains of the Lower Bagshot Beds of Studland Bay suggest cooler conditions, according to Mr. Starkie Gardner, than prevailed immediately before and afterwards.

After the deposition of the Bagshot Beds and of certain succeeding Lower Tertiary strata, met with along the Hampshire coast and in the Isle of Wight, we have no further records until comparatively recent geological times. The Purbeck area was a plain whose older strata were buried beneath a thick mass of chalk, and overlying Eocene strata. Other forces came now into work, and the beds became folded into the anticlinal, which extends westwards to Weymouth and eastwards to the Isle of Wight. Faults and ruptures attended the movement of elevation. Whether the ground was elevated in mass above the sea-level, or whether the beds were upheaved slowly and partially planed down by the sea during the process, it is difficult to say. Of this there is no doubt, that the present features are largely due to the modifying influences of rain, streams, and frost. The Corfe stream, which flows through the Chalk ridge, must have commenced its course when the Chalk extended further south.

Since Pliocene times the area has been subject to waste, chiefly by meteoric agencies. So that there has been plenty of time for the formation of the deep hollows and valleys of Encombe and the Golden Bowl, of Renscombe and Seacombe, of the vale that extends from Worbarrow Bay to Swanage Bay, and of the ravines hollowed in the sandy tracts near Studland.

The Agglestone, or Devil's Night Cap, near Studland, is an isolated weathered remnant of Lower Bagshot Sands, which, like some of the rocks near Tunbridge Wells, remains from the fact of its being locally hardened, in the case of the Agglestone by

ferruginous cement. A smaller rock known as the Puckstone occurs on a neighbouring hill.

Here and there we find small areas of gravel that remain as relics of denudation, in the area between Corfe Castle and Wareham. South-east of Encombe House a rubble of Portland and Purbeck Beds has been worked for gravel, and remains of the elephant (Mammoth) and deer have been recorded from the superficial accumulations in this neighbourhood.

No Palæolithic implements have been found, to indicate the presence of man in these older drifts; but at Bucknowle, south-west of Corfe Castle, more recent accumulations with pottery and human remains have been observed.

At the Kimmeridge Coal-works, and near Smedmore, small discs known as coal money have at various times been found in the surface soil or in artificial mounds. It is considered that most of these may be simply the refuse from which rings or armlets have been turned in a lathe, or they may be the bases of vases or bowls.

The steep slopes of the Portland Beds are usually marked by the tiny slips which form irregular and miniature terraces, often made use of as sheep tracks. There are, however, some bolder ridges or terraces which are the results of ancient systems of cultivation. They may be seen near Langton and Worth, and are known as Linchets or Lynches. It has been pointed out that such ridges would be rapidly formed when, in early times (on the arable Common-field system), nothing was more usual than for the owner or occupier to possess and cultivate several distinct strips or breadths of land separated from one another by the lands of others. When a hill-side formed part of the open field, the strips were almost always made to run more or less horizontally along it. Each upper cultivator would naturally have taken care not to allow the soil of his strip to descend to fertilize his neighbour's below, and by forming boundary furrows with a slight ridge of soil between he would pave the way for a bank of earth which in the course of years increases into a linchet several feet in height.*

The Blown Sand forms picturesque hillocks bordering the shore of Studland Bay. Much of it is formed by the waste of the Bagshot Sands.

*| See F. Seebohm, "The English Village Community," 1883, p. 5.

In certain places Musical Sand has been observed. It occurs on sea-coasts and inland, in situations where it has been sorted by the action of sea or wind, or by both agents. The grains, as Mr. Carus-Wilson remarks,* must be rounded, polished, and free from fine fragments and earthy matter, and of a certain uniformity in size. Such sand is said to be musical when walked upon, or agitated with the hand. In this way sand in some places in Studland Bay was found to emit weak but distinct notes when agitated on the beach. The sand is composed chiefly of quartz grains, and occurred in a narrow zone varying from twelve to fifteen yards between the blown sand and the high-water mark.

* Paper read before Bournemouth Society of Natural Science, 1888 reprinted 8vo., Poole.

BOTANY.

THERE are many who, when taking a holiday, like to combine instruction with pleasure; for these, and those pent up in cities for the greater part of the year, who will be glad to make the acquaintance of the many interesting botanical specimens to be found in the neighbourhood of Swanage, we append lists for which we are partly indebted to Mr. J. C. Mansel-Pleydell, Mr. Eustace Bankes and Mr. Herbert Goss. As our work is not intended for a scientific treatise, but for the amateur botanist, we have contented ourselves with a list of the more readily found plants; at the same time, such a catalogue speaks volumes for the temperate and generous climate of Swanage.

A LIST OF SHRUBS AND TREES THAT GROW LUXURIOUSLY, NEAR THE SEA, IN SWANAGE.

Latin Name.	*English Name.*
Araucaria imbricata	Monkeys' puzzle.
Cupressus macrocarpa	Cypress.
„ Crippsii	
Pinus Austriaca	Austrian Pine.
Taxus baccata	English Yew.
„ aurea	Golden „
„ fastigiata	Irish „
Wellingtonia gigantea	Mammoth Tree.
Rhododendron	
Gaultheria Shallon	
Aralia Sieboldii	Aralia.
Berberis Darwinii	Darwin's Berbery.
„ aquifolium	Holly-leaved Berbery.
Buddlea globosa	Buddlea.
Cerasus lauro-Cerasus	Common Laurel.
„ Lusitanica	Portugal „
Daphne laureola	Spurge „
Escallonia macrantha	Escallonia.
Euonymus fimbriatus	Spindle Tree.

Latin Name.	*English Name.*
Aucubas, male and female	Aucuba.
Laurus nobilis	Sweet Bay.
Garrya elliptica	Garryad.
Ilex aquifolium	Common Holly.
Ligustrum angustifolium	Privet.
Phillyrea angustifolia	Norrow-leaved Phillyrea.
Quercus ilex	Evergreen Oak.
Spartium scoparium	Yellow Broom.
Veronica	
Viburnum tinus	Laurestine.
Acer pseudo-platanus	Sycamore.
Cratægus coccinea plena	Hawthorn.
„ multiplex F. P.	
„ runicea F. P.	
Oxyacantha rosea	
Cytisus laburnum	Common Laburnum.
Deutzia scabra	Deutzia.
Fagus sylvatica	Common Beech.
„ cuprea	Copper „
Fraxinus excelsior	Common Ash.
„ ornus	Flowering „
Populus alba	Poplar, Silver.
„ fastigiata...	„ Lombardy.
Ribes sanguineum	Flowering Currant.
Sambucus nigra	Elder.
„ argentea-variegata	Variegated Elder.
Syringa vulgaris	Common Lilac.
Tamarix Germanica	Tamarix.
Tilia Europæa	Lime Tree.
Ulmus campestris...	English Elm.
Fuchsias	

Palms are found growing luxuriantly in Swanage; the one that thrives best is the Chamærops Fortunei.

December Flowers.—We gather from an interesting paper read by Mr. Eustace Bankes before *The Dorset Natural History and Antiquarian Field Club*, in December 1889, that the Isle of Purbeck often abounds in wild flowers as far into the winter as the middle of December. Mr. Bankes says: "It would probably be almost an insult to the feelings of every one to refer to the miserable apology for a summer to which we were treated in 1888; but certainly no less remarkable, though decidedly more enjoyable,

than that almost unprecedented period of continuous rain was the exceptionally mild autumn and winter which brought the year to a close. It is not likely that any of us need to be reminded of the wonderful variety of plants which were still in bloom and adorned our gardens throughout November and December; but to those who had the chance of observing them, the profusion of wild flowers which brightened up the fields and hedgerows during those months was even more astonishing, and furnished a striking proof —if proof had been wanting—of the excessive mildness of the weather, and the almost entire absence of frost at night. The principal cause of this mildness was to be found in the continuous succession of cyclonic disturbances which came to us from the Atlantic Ocean, bringing with them a warm, damp atmosphere; and its effect on vegetation was twofold; for not only did the absence of frost allow many of the summer and autumn flowering plants to continue to open their petals, but the high temperature which prevailed for week after week forced on, as though in a hothouse, many of our spring flowers, and made them come into bloom several months before their time. This will account for the peculiarly mixed variety of species found side by side, which, in the ordinary course of events, are never associated together. As an instance of this, we may mention that such summer flowers as the red poppy, corn marigold, foxglove, and the several species of heath were in bloom at the same time as the autumn-flowering ivy, and such peculiarly spring plants as the lesser celandine, the dog violet, and the primrose. Thinking that it would be of great interest to take advantage of such an exceptional state of things in the middle of an English winter, the Rev. Lester Lester, of Langton Matravers, the Rev. Owen L. Mansel, of Church Knowle, and the writer of this paper agreed to make separate lists of all the strictly wild flowers which they happened to notice within the limits of the Isle of Purbeck during the first fortnight of December, and the following catalogue embodies the result of our observations. It must be here stated that our researches were not carried on at all systematically, or no doubt many more might have been added; but we simply noted down those that we happened to meet with; and a large proportion of the species for which I am responsible were gathered or noticed while I was engaged in shooting. However, in spite of this our list has assumed very respectable proportions; and when it is found that it comprises

one hundred and five different species of wild flowers (exclusive of all grasses, ferns, and kindred orders), it will probably be admitted that such a record is almost unprecented for the time of year. There is little doubt but that a few additional names might have been inserted; but unfortunately, owing to an insufficient knowedge of botany—to which I most particularly must plead guilty—and ack of spare time to work them out, a few obscure species, which could not be satisfactorily determined, had to be omitted. In amalgamating our three separate lists, it was of course found that a fair proportion were common to all the three; but of those species which were only noticed by one observer, Mr. Lester appears to have recorded seven, Mr. Owen Mansel five, and I am responsible for exactly forty." The paper concluded by enumerating the wild flowers noticed or gathered, and we append the list, omitting the Latin names, however, and giving only their more common nomenclature. The following are the names of the wild flowers noticed or gathered:—Lesser celandine, creeping buttercup, meadow crowfoot, bulbous buttercup, common red poppy, common watercress, common hedge mustard, wild mustard, shepherd's purse, dog violet, common milkwort, sea campion, evening campion, red campion, three-nerved sandwort, broad-leaved mouse-ear chickweed, viscid mouse-ear chickweed, lesser stitchwort, little flax, dwarf mallow, herb Robert, dove's foot, brance's-bill, jagged brance's-bill, long-stalked brance's-bill, common furze, dwarf furze, white clover, purple clover, hop clover, lesser yellow clover, lesser yellow trefoil, common vetch or sainfoin, bush vetch, common avens, wood strawberry and one ripe fruit, creeping cinquefoil, common tormentil, common bramble or blackberry, rough chervil, wild carrot, common beaked parsley, wild beaked parsley, upright hedge parsley, common ivy, cleavers, field madder, devil's bit scabious, common erigeron, golden rod, daisy, ox-eye daisy, corn marigold, sea scentless mayweed, stinking camomile, yarrow, common groundsel, marsh ragwort, common ragwort, musk thistle, wetted thistle, slender thistle, spear thistle, black knapweed, bristly ox-tongue, common hawkbit, autumnal hawkbit, glabrous hypochœre, long-rooted cat's ear, common sow-thistle, prickly sowthistle, common dandelion, smooth hawk's beard, mouse-ear hawkweed, common nipplewort, sheep's bit, nettle-leaved campanula, cross-leaved heath, ciliated heath, Scotch heath, common ling, common primrose, common centaury, field

mouse-ear, small bugloss, common borage, black nightshade, ivy-leaved toadflax, purple foxglove, thyme-leaved speedwell, germander speedwell, ivy-leaved speedwell, procumbent speedwell, Buxbaum's speedwell, wild basil, selfheal, hedge woundwort, corn woundwort, purple dead nettle, white dead nettle, woodsage, white goosefoot, petty spurge, perennial dog's mercury, scarlet pimpernel.

LIST OF PLANTS

FOUND WITHIN A RADIUS OF SIX MILES FROM SWANAGE,

BY J. C. MANSEL-PLEYDELL, M.A., F.L.S.

(*The arrangement and nomenclature is that adopted in the "London Catalogue of British Plants," 8th Edition.*)

RANUNCULACEÆ.

Clematis—
Vitalba, Linn.
Thalictrum—
Flavum, Linn.
Anemone—
Nemorosa, Linn.
Adonis—
Autumnalis, Linn.
Ranunculus—
Baudotii, Godr.
b. Confusus, Godr.
Tripartitus, DC.
Lenormandi, F. Schultz.
Hederaceus, Linn.
Sceleratus, Linn.
Flammula, Linn.
Lingua, Linn.
Auricomus, Linn.
Acris, Linn.
Repens, Linn.
Bulbosus, Linn.
Sardous, Crantz.
Parviflorus, Linn.
Arvensis, Linn.
Ficaria, Linn.
Caltha—
Palustris, Linn.
Aquilegia—
Vulgaris, Linn.
Delphinium—
Ajacis, Reichb.

NYMPHÆACEÆ.

Nuphar—
Luteum, Sm.

PAPAVERACEÆ.

Papaver—
Rhœas, Linn.
Dubium, Linn.
b. Lecoqii (Lamot.)
Argemone, Linn.
Hybridum, Linn.
Glaucium—
Flavum, Crantz.
Chelidonium—
Majus, Linn.

FUMARIACEÆ.

Fumaria—
Confusa, Jord.
Officinalis, Linn.

CRUCIFERÆ.

Nasturtium—
Officinale, R. Br.
b. Siifolium (Reichb.), Koch.
Barbarea—
Vulgaris, R. Br.
Præcox, R. Br.
Arabis—
Sagittata, DC.
Cardamine—
Pratensis, Linn.
Hirsuta, Linn.
F exuosa, With.

Erophila (*Draba*)—
Vulgaris, DC.
Cochlearia—
Officinalis, Linn.
Danica, Linn.
Anglica, Linn.
Sisymbrium—
Thaliana, Hook.
Officinale, Scop.
Alliaria, Scop.
Brassica—
Oleracea, Linn.
Napus, Linn. ?
Rapa, Linn. ?
Nigra, Koch.
Sinapis, Visiani.
Alba, Boiss.
Capsella—
Bursa-pastoris, Moench.
Senebiera—
Didyma, Pers.
Coronopus, Poir.
Lepidium—
Campestre, R. Br.
Smithii, Hook.
Crambe—
Maritima, Linn.
Cakile—
Maritima, Scop.

RESEDACEÆ.

Reseda—
Lutea, Linn
Luteola, Linn.

CISTINEÆ.

Helianthemum—
Chamæcistus, Mill.

VIOLARIEÆ.

Viola—
Odorata, Linn
b. Alba, Besser.
Hirta, Linn.
Sylvatica, Fr.
Reichenbachiana, Bor.
Lactea, Sm.
Tricolor, Linn.
Arvensis, Murr.

POLYGALEÆ.

Polygala—
Vulgaris, Linn.
Serpyllacea, Weihe.
Calcarea, F. Schultz.

CARYOPHYLLEÆ.

Silene—
Cucubalus, Wibel.
Maritima, With.
Gallica, Linn.
a. Anglica, Linn.
Nutans, Linn.
Lychnis—
Alba, Mill.
Diurna, Sibth.
Flos-cuculi, Linn.
Githago, Lam.
Cerastium—
Quaternellum, Fenzl.
Tetrandrum, Curt
Semidecandrum, Linn.
Glomeratum, Thuill
Triviale, Link.
Stellaria—
Aquatica, Scop
Media, Cyr.
Holostea, Linn.
Graminea, Linn.
Uliginosa, Murr.
Arenaria—
Trinervia, Linn.
Serpyllifolia, Linn.
c. Leptoclados, Guss.
Peploides, Linn.
Sagina—
Maritima, Don.
Apetala, Linn
Ciliata, Fr.
Procumbens, Linn.
Subulata, Presl.
Nodosa, E. Mey.
Spergula—
Arvensis, Linn.
a. Vulgaris, Boenn.
Lepigonum—
Rubrum, Fr.
Salinum, Fr.

Lepigonum (continued)—
b. Medium, Fr.
c. Neglectum, Kindb.
Marginatum, Koch.

PORTULACEÆ.

Montia fontana, Linn.

TAMARISCLIVEÆ.

Tamarix—
Gallica, Linn.

HYPERICINEÆ.

Hypericum—
Androsæmum, Linn.
Perforatum, Linn.
Quadrangulum, Linn.
Quadratum, Stokes.
Humifusum, Linn.
Pulchrum, Linn.
Hirsutum, Linn.
Montanum, Linn.
Elodes, Huds.

MALVACEÆ.

Malva—
Moschata, Linn.
Sylvestris, Linn.
Rotundifolia, Linn.

TILIACEÆ.

Tilia—
Vulgaris, Hayne.
Cordata, Mill.

LINEÆ.

Radiola—
Linoides, Gmel.

Linum—
Catharticum, Linn.
Angustifolium, Huds.

GERANIACEÆ.

Geranium—
Molle, Linn.
Pusillum, Burm.
Dissectum, Linn.
Columbinum, Linn.
Lucidum, Linn.
Robertianum, Linn.
c. Purpureum, auct. angl.

Erodium—
Cicutarium, L'Hérit.
Moschatum, L'Hérit.
Maritimum, L'Hérit.

Oxalis—
Acetosella, Linn.

ILICINEÆ.

Ilex—
Aquifolium, Linn.

CELASTRINEÆ.

Euonymus—
Europæus, Linn.

RHAMNEÆ.

Rhamnus—
Catharticus, Linn.
Frangula, Linn.

SAPINDACEÆ.

Acer—
Pseudo-platanus, Linn.
Campestre, Linn.

LEGUMINOSÆ.

Genista—
Anglica, Linn.
Tinctoria, Linn.

Ulex—
Europæus, Linn.
Gallii, Planch.
Nanus, Forster.

Cytisus—
Scoparius, Link.

Ononis—
Repens, Linn.

Medicago—
Lupulina, Linn.
Denticulata, Willd.
Maculata, Sibth.

Melilotus—
Altissima, Thuill.

Trifolium—
Subterraneum, Linn.
Pratense, Linn.
Medium, Linn.
Maritimum, Huds.
Incarnatum, Linn.
Arvense, Linn.
Striatum, Linn.
Scabrum, Linn.
Glomeratum, Linn.
Suffocatum, Linn.
Repens, Linn.
Fragiferum, Linn.

Trifolium (continued)—
Procumbens, Linn.
Dubium, Sibth.
Filiforme, Linn.
Anthyllis—
Vulneraria, Linn
Lotus—
Corniculatus, Linn.
Pilosus, Beeke.
Hispidus, Desf.
Ornithopus—
Perpusillus, Linn.
Hippocrepis—
Comosa, Linn.
Onobrychis—
Sativa, Lam.
Vicia—
Hirsuta, Koch.
Tetrasperma, Moench.
Gracilis, Lois.
Cracca, Linn.
Sylvatica, Linn.
Sepium, Linn.
Bythinica, Linn.
Angustifolia, Roth.
a. Segetalis, Thuill.
Lathyroides, Linn.
Lathyrus—
Aphaca, Linn.
Nissolia, Linn.
Pratensis, Linn.
Sylvestris, Linn.
Macrorrhizus, Wimm.
b. Tenuifolius, Roth.

ROSACEÆ.

Prunus—
Communis, Huds.
Insititia, Linn.
Spiræa—
Ulmaria, Linn.
Filipendula, Linn.
Rubus—
Idæus, Linn.
Affinis, W. & N.
Lindleiarius, Sm.
Rhamnifolius, W. & N.
Rusticanus, Merc.

Rubus (continued)—
Leucostachys, Sm.
Salteri, Bab.
b. Calvatus, Blox.
Villicaules, Kœhl.
Maassii, Focke.
Sprengelii, Weihe.
Echinatus, Lindl.
Radula, Weihe.
Diversifolius, Lindl.
Corylifolius, Sm.
a. Sublustris, Lindl.
Deltoideus, P. J. Müll.
Cæsius, Linn.
Geum—
Urbanum, Linn
Fragaria—
Vesca, Linn.
Potentilla—
Fragariastrum, Ehrh.
Tormentilla, Neck.
Reptans, Linn.
Anserina, Linn.
Comarum, Nestl.
Alchemilla—
Arvensis, Lam.
Agrimonia—
Eupatoria, Linn.
Poterium—
Sanguisorba, Linn.
Muricatum, Spach.
Officinale, Hook, f.
Rosa—
Spinosissima, Linn.
Rubiginosa, Linn.
Micrantha, Sm.
Canina, Linn.
a. Lutetiana, Leman
b. Sphærica, Gren.
c. Dumalis (Bechst.)
d. Biserrata (Merat.)
e. Urbica (Leman.)
f. Obtusifolia (Desv.)
Stylosa, Desv.
b. Systyla, Bast.
Arvensis, Huds.
c. Bibracteata, Bast

Pyrus—
Malus, Linn.
Cratægus—
Oxyacantha, Linn.
a Monogyna, Jacq.

SAXIFRAGEÆ.

Saxifraga—
Tridactylites, Linn.
Chrysosplenium—
Oppositifolium, Linn.
Parnassia—
Palustris, Linn.
Ribes—
Grossularia, Linn.

CRASSULACEÆ.

Tillæa—
Muscosa, Linn.
Cotyledon—
Umbilicus, Linn.
Sedum—
Album, Linn.
Anglicum, Huds.
Acre, Linn.
Sempervivum—
Tectorum, Linn.

DROSERACEÆ.

Drosera—
Rotundifolia, Linn.
Anglica, Huds.
b. Obovata, M. & K.
Intermedia, Hayne.

HALORAGEÆ.

Myriophyllum—
Spicatum, Linn.
Alterniflorum, D. C.
Callitriche—
Stagnalis, Scop.
Hamulata, Kuetz.
Obtusangula, Le Gall.

LYTHRARIEÆ.

Lythrum—
Salicaria, Linn.
Peplis—
Portula, Linn.

ONAGRARIEÆ.

Epilobium—
Angustifolium, Linn.
Epilobium (continued)—
Hirsutum, Linn
Parviflorum, Schreb.
Montanum, Linn.
Tetragonum, Linn.
Obscurum, Schreb.
Palustre, Linn.
Circæa—
Lutetiana, Linn.

CUCURBITACEÆ.

Byronia—
Dioica, Linn.

UMBELLIFERÆ.

Hydrocotyle—
Vulgaris, Linn.
Eryngium—
Maritimum, Linn.
Sanicula—
Europæa, Linn.
Conium—
Maculatum, Linn.
Smyrnium—
Olusatrum, Linn.
Apium—
Graveolens, Linn.
Nodiflorum, Reichb.
Inundatum, Reichb.
Carum—
Petroselinum, Benth.
Segetum, Benth.
Sison—
Amomum, Linn.
Ægopodium—
Podagraria, Linn.
Pimpinella—
Saxifraga, Linn.
Conopodium—
Denudatum, Koch.
Chærophyllum—
Temulum, Linn.
Scandix—
Pecten-Veneris, Linn.
Anthriscus—
Sylvestris, Hoffm.
Vulgaris, Pers.
Fœniculum—
Officinale, All

Crithmum—
Maritimum, Linn.
Œnanthe—
Fistulosa, Linn.
Pimpinelloides, Linn.
Lachenalii, Gmel.
Crocata, Linn.
Fluviatilis, Coleman.
Æthusa—
Cynapium, Linn.
Silaus—
Pratensis, Bess.
Angelica—
Sylvestris, Linn.
Peucedanum—
Sativum, Benth.
Heracleum—
Sphondylium, Linn.
Daucus—
Carota, Linn.
Gummifer, Lam.
Caucalis—
Daucoides, Linn.
Anthriscus, Huds.
Arvensis, Huds.
Nodosa, Scop.

ARALIACEÆ.

Hedera—
Helix, Linn.

CORNACEÆ.

Cornus—
Sanguinea, Linn.

CAPRIFOLIACEÆ.

Adoxa—
Moschatellina, Linn.
Sambucus—
Nigra, Linn.
Ebulus, Linn.
Viburnum—
Opulus, Linn.
Lantana, Linn.
Lonicera—
Periclymenum, Linn.

RUBIACEÆ.

Rubia—
Peregrina, Linn.
Galium—
Cruciata, Scop.
Verum, Linn.
Mollugo, Linn.
a. Elatum, Thuill.
Saxatile, Linn.
Palustre, Linn.
Uliginosum, Linn.
Aparine, Linn.
Tricorne, With.
Asperula—
Odorata, Linn.
Cynanchica, Linn.
Sherardia—
Arvensis, Linn.

VALERIANEÆ.

Valeriana—
Officinalis, Linn.
b. Sambucifolia, auct. angl.
Valerianella—
Olitoria, Moench.
Auricula, DC.
Dentata, Poll.

DIPSACEÆ.

Dipsacus—
Sylvestris, Linn.
Scabiosa—
Succisa, Linn.
Columbaria, Linn.
Arvensis, Linn.

COMPOSITÆ.

Eupatorium—
Cannabinum, Linn.
Solidago—
Virgaurea, Linn.
Bellis—
Perennis, Linn.
Aster—
Tripolium, Linn.
Erigeron—
Acre, Linn.
Filago—
Germanica, Linn.
Spathulata, Presl.
Minima, Fr.

Gnaphalium—
Uliginosum, Linn.
Inula—
Helenium, Linn.
Conyza, DC.
Crithmoides, Linn.
Pulicaria—
Dysenterica, Gærtn.
Achillea—
Millefolium, Linn.
Ptarmica, Linn.
Anthemis—
Cotula, Linn.
Arvensis, Linn.
Nobilis, Linn.
Chrysanthemum—
Segetum, Linn.
Leucanthemum, Linn
Matricaria—
Inodora, Linn.
b. Salina, Bab.
Chamomilla, Linn.
Tanacetum—
Vulgare, Linn.
Artemisia—
Absinthium, Linn.
Vulgaris, Linn.
Maritima, Linn.
Tussilago—
Farfara, Linn.
Petasites—
Vulgaris, Desf.
Senecio—
Vulgaris, Linn.
Sylvaticus, Linn.
Erucifolius, Linn.
Jacobæa, Linn.
Aquaticus, Huds
Carlina—
Vulgaris, Linn.
Arctium—
Majus, Schk.
Minus, Schk.
Carduus—
Pycnocephalus, Jacq.
Nutans, Linn.

Carduus (continued)—
Crispus, Linn.
c. Acanthoides, Linn
Cnicus—
Lanceolatus, Hoffm.
Eriophorus, Hoffm.
Palustris, Hoffm.
Pratensis, Willd.
Acaulis, Hoffm.
Arvensis, Hoffm.
Onopordon—
Acanthium, Linn.
Silybum—
Marianum, Gærtn.
Serratula—
Tinctoria, Linn.
Centaurea—
Nigra, Linn.
b. Decipiens, Thuill.
Scabiosa, Linn.
Cyanus, Linn.
Cichorium—
Intybus, Linn.
Lapsana—
Communis, Linn.
Picris—
Hieracioides, Linn.
Echioides, Linn.
Crepis—
Virens, Linn.
Hieracium—
Pilosella, Linn.
Murorum, Linn. pt.
Vulgatum, Fr.
Tridentatum, Fr.
Umbellatum, Linn.
Boreale, Fr.
Hypochœris—
Glabra, Linn.
Radicata, Linn.
Leontodon—
Hirtus, Linn.
Hispidus, Linn.
Autumnalis, Linn.
Taraxacum—
Officinale, Web.
a. Dens Leonis, Desv.
b. Erythrospermum, Andrz.

Taraxacum (continued)—
c. Palustre, DC.
Sonchus—
Oleraceus, Linn.
Asper, Hoffm.
Arvensis, Linn.
Tragopogon—
Pratensis, Linn.
b. Minus, Mill.
Porrifolius, Linn.

CAMPANULACEÆ.

Jasione—
Montana, Linn.
Campanula—
Trachelium, Linn.
Rotundifolia, Linn.
Specularia—
Hybrida, DC.

ERICACEÆ.

Calluna—
Erica, DC.
Erica—
Ciliaris, Linn.
Tetralix, Linn.
Mackayi, Hook.
Cinerea, Linn.

PLUMBAGINEÆ.

Statice—
Limonium, Linn.
a. Genuina, Syme.
b. Pyramidalis, Syme.
Auriculæfolia, Vahl.
a. Intermedia, Syme.
Armeria—
Maritima, Willd.

PRIMULACEÆ.

Primula—
Vulgaris, Huds.
Veris, Linn.
Lysimachia—
Nummularia, Linn.
Nemorum, Linn.
Glaux—
Maritima, Linn.
Anagallis—
Arvensis, Linn.
Tenella, Linn.
Centunculus—
Minimus, Linn
Samolus—
Valerandi, Linn.

OLEACEÆ.

Fraxinus—
Excelsior, Linn
Ligustrum—
Vulgare, Linn.

APOCYNACEÆ.

Vinca—
Major, Linn.

GENTIANEÆ.

Microcala (*Cicendia*)—
Filiformis, Link.
Erythræa—
Centaurium, Pers.
Pulchella, Fr.
Blackstonia (*Chlora*)—
Perfoliata, Huds.
Gentiana—
Pneumonanthe, Linn.
Amarella, Linn.
Campestris, Linn.
b. Præcox, Raf.
Menyanthes—
Trifoliata, Linn.

BORAGINEÆ.

Cynoglossum—
Officinale, Linn.
Symphytum—
Officinale, Linn.
Lycopsis—
Arvensis, Linn.
Myosotis—
Cæspitosa, Schultz
Palustris, With.
Repens, D. Don.
Arvensis, Hoffm.
Collina, Hoffm.
Versicolor, Reichb.
Lithospermum—
Officinale, Linn.
Arvense, Linn.
Echium—
Vulgare, Linn.

CONVOLVULACEÆ.

Calystegia—
Sepium, R. Br.
Soldanella, R. Br.
Convolvulus—
Arvensis, Linn.
Cuscuta—
Epithymum, Murr.

SOLANACEÆ.

Solanum—
Dulcamara, Linn.
Nigrum, Linn.
Lycium—
Barbarum, Linn.
Hyoscyamus—
Niger, Linn.

SCROPHULARINEÆ.

Verbascum—
Thapsus, Linn.
Linaria—
Cymbalaria, Mill.
Elatine, Mill.
Spuria, Mill.
Vulgaris, Mill.
Minor, Desf.
Antirrhinum—
Orontium, Linn.
Scrophularia—
Aquatica, Linn.
Nodosa, Linn.
Digitalis—
Purpurea, Linn.
Veronica—
Hederæfolia, Linn.
Polita, Fr.
Agrestis, Linn.
Persica, Poir.
Arvensis, Linn.
Serpyllifolia, Linn.
Officinalis, Linn.
Chamædrys, Linn.
Montana, Linn.
Scutellata, Linn.
Anagallis, Linn.
Beccabunga, Linn.
Euphrasia—
Officinalis, Linn.
Bartsia—
Odontites, Huds.
b. Scrotina, Reichb.
Viscosa, Linn.
Pedicularis—
Palustris, Linn.
Sylvatica, Linn.
Melampyrum—
Pratense, Linn.
Rhinanthus—
Crista-galli, Linn.

OROBANCHACEÆ.

Orobanche—
Major, Linn.
Minor, Sm.
Picridis, F. Schultz.
Amethystea, T. Smith.

LENTIBULARIEÆ.

Utricularia—
Minor, Linn.
Intermedia, Hayne.
Pinguicula—
Lusitanica, Linn.

VERBENACEÆ.

Verbena—
Officinalis, Linn.

LABIATÆ.

Mentha—
Viridis, Linn.
Hirsuta, Linn.
Sativa, Linn.
Arvensis, Linn.
Lycopus—
Europæus, Linn.
Origanum—
Vulgare, Linn.
Thymus—
Serpyllum, Fr.
Chamædrys, Fr.
Calamintha—
Clinopodium, Benth.
Officinalis, Moench.
Arsensis, Lam.

Salvia—
Verbenaca, Linn.
Scutellaria—
Galericulata, Linn.
Minor, Linn.
Prunella—
Vulgaris, Linn.
Marrubium—
Vulgare, Linn.
Stachys—
Betonica, Benth.
Palustris, Linn.
Sylvatica, Linn.
Arvensis, Linn.
Galeopsis—
Ladanum, Linn.
Tetrahit, Linn.
Leonurus—
Cardiaca, Linn.
Lamium—
Amplexicaule, Linn.
Purpureum, Linn.
Album, Linn.
Galeobdolon, Crantz.
Ballota—
Nigra, Linn.
Teucrium—
Scorodonia, Linn.
Ajuga—
Reptans, Linn.

PLANTAGINEÆ.

Plantago—
Major, Linn.
Media, Linn.
Lanceolata, Linn.
Maritima, Linn.
Coronopus, Linn.
Littorella—
Lacustris, Linn.

ILLECEBRACEÆ.

Scleranthus—
Annuus, Linn.

CHENOPODIACEÆ.

Chenopodium—
Vulvaria, Linn.
Chenopodium (continued)—
Album, Linn.
a. Candicans Lam.
Hybridum, Linn.
Rubrum, Linn.
Murale, Linn.
Bonus-Henricus, Linn.
Beta—
Maritima, Linn.
Atriplex—
Littoralis, Linn.
Patula, Linn.
b. Erecta, Huds.
c. Angustifolia, Sm.
Hastata, Linn.
Deltoidea, Bab.
Babingtonii, Woods.
Portulacoides, Linn.
Salicornia—
Herbacea, Linn.
Radicans, Sm.
Suæda—
Maritima, Dum.
Fruticosa, Forsk.
Salsola—
Kali, Linn.

POLYGONACEÆ.

Polygonum—
Convolvulus, Linn.
Aviculare, Linn.
a. Agrestinun, Jord.
b. Vulgatum, Syme.
c. Arenastrum (Bor.)
d. Littorale, Link.
Amphibium, Linn.
Hydropiper, Linn.
Persicaria, Linn.
Lapathifolium, Linn.
Bistorta, Linn.
Rumex—
Conglomeratus, Murr.
Sanguineus, Linn.
b. Viridis, Sibth.
Maritimus, Linn. (*vide* Pulteney).
Pulcher, Linn.
Obtusifolius, Linn.
Acutus, Linn.

Rumex (continued)—
Crispus, Linn.
Hydrolapathum, Huds.
Acetosa, Linn.
Acetosella, Linn.

SANTALACEÆ.

Thesium—
Linophyllum, Linn.

EUPHORBIACEÆ.

Euphorbia—
Helioscopia, Linn.
Platyphyllos, Linn.
Amygdaloides, Linn.
Portlandica, Linn.
Peplus, Linn.
Exigua, Linn.
Lathyris, Linn.
Paralias, Linn. (*vide* Pulteney).
Mercurialis—
Perennis, Linn.
Annua, Linn.

URTICACEÆ.

Ulmus—
Montana, Sm.
Campestris, Sm.
Humulus—
Lupulus, Linn.
Urtica—
Dioica, Linn.
Urens, Linn.
Parietaria—
Officinalis, Linn.

MYRICACEÆ.

Myrica—
Gale, Linn.

CUPULIFERÆ.

Betula—
Alba, Linn.
Glutinosa, Fr.
Alnus—
Glutinosa, Linn.
Carpinus—
Betulus, Linn.
Corylus—
Avellana, Linn.
Quercus—
Robur, Linn.
Fagus—
Sylvatica, Linn.

SALICINEÆ.

Salix—
Repens, Linn.
Pentandra, Linn.
Alba, Linn.
Cinerea, Linn.
Aurita, Linn.
Purpurea, Linn.
Caprea, Linn.
Viminalis, Linn.
Populus—
Alba, Linn.
Tremula, Linn.

CERATOPHYLLEÆ.

Ceratophyllum—
Demersum, Linn. ?

CONIFERÆ.

Pinus—
Sylvestris, Linn.
Pinaster, Ait.

ORCHIDEÆ.

Malaxis—
Paludosa, Sw.
Listera—
Ovata, R. Br.
Spiranthes—
Autumnalis, Rich.
Epipactis—
Palustris, Crantz.
Orchis—
Pyramidalis, Linn.
Ustulata, Linn.
Morio, Linn.
Mascula, Linn.
Incarnata, Linn.
Latifolia, Linn.
Maculata, Linn.
Ophrys—
Apifera, Huds.
Aranifera, Huds.
b. Fucifera, Sm.
Habenaria—
Conopsea, Benth.

Habenaria (continued)—
Bifolia, R. Br.
Chloroleuca, Ridley.

IRIDEÆ.

Iris—
Fœtidissima, Linn.
b. Citrina, Syme.
Pseudacorus, Linn.

DIOSCOREÆ.

Tamus—
Communis, Linn.

LILIACEÆ.

Ruscus—
Aculeatus, Linn.
Allium—
Vineale, Linn.
a. Compactum, Thuill.
Ursinum, Linn.
Scilla—
Nutans, Sm.
Colchicum—
Autumnale, Linn.
Narthecium—
Ossifragum, Huds.

JUNCACEÆ.

Juncus—
Bufonius, Linn
Squarrosus, Linn.
Gerardi, Lois.
Glaucus, Ehrh.
Diffusus, Hoppe.
Effusus, Linn.
Conglomeratus, Linn.
Maritimus, Lam.
Supinus, Moench.
b. Kochii, Syme.
c. Ulignosius (Roth.)
Obtusiflorus, Ehrh.
Lamprocarpus, Ehrh.
Acutiflorus, Ehrh.
Luzula—
Pilosa, Willd.
Campestris, DC
Multiflora Lej.
b. Congesta, Koch.

TYPHACEÆ.

Typha—
Latifolia, Linn.
Angustifolia, Linn.
Sparganium—
Ramosum, Curtis.
Simplex, Huds.

AROIDEÆ.

Arum—
Maculatum, Linn.
Italicum, Mill.

LEMNACEÆ.

Lemna—
Minor, Linn.

ALISMACEÆ.

Alisma—
Plantago, Linn.
Ranunculoides, Linn.
Sagittaria—
Sagittifolia, Linn.

NAIADACEÆ.

Triglochin—
Palustre, Linn.
Maritimum, Linn.
Potamogeton—
Polygonifolius, Pour.
Pusillus, Linn.
b. Tenuissimus, Koch.
Natans, Linn.
Pectinatus, Linn.
b. Scoparius, Walr.
Densus, Linn.
Ruppia—
Spiralis, Hartm.
Rostellata, Koch.
Zannichellia—
Palustris, Linn.
Zostera—
Marina, Linn.
Nana, Roth.

CYPERACEÆ.

Cyperus—
Longus, Linn.
Eleocharis—
Acicularis, Sm.
Uniglumis, Link.

Scirpus—
Cæspitosus, Linn.
Parvulus, Roem. & Schult.
Fluitans, Linn.
Savii, Seb. & Maur.
Lacustris, Linn.
Tabernæmontani, Gmel.
Maritimus, Linn.
Rufus, Wahlb.

Eriophorum—
Angustifolium, Roth.
Latifolium, Hoppe.

Rynchospora—
Fusca, Roem. & Schult.
Alba, Valh.

Schœnus—
Nigricans, Linn.

Carex—
Dioica, Linn.
Arenaria, Linn.
Vulpina, Linn.
Muricata, Linn.
Divulsa, Good.
Echinata, Murr.
Remota, Linn.
Axillaris, Good.
Ovalis, Good.
Acuta, Linn.
Goodenowii, J. Gay.
Glauca, Murr.
Pilulifera, Linn.
Præcox, Jacq.
Pallescens, Linn.
Panicea, Linn.
Pendula, Huds.
Sylvatica, Huds.
Lævigata, Sm.
Binervis, Sm.
Distans, Linn.
Punctata, Gaud.
Extensa, Good.
Flava, Linn.
b. Minor, Towns.
c. Lepidocarpa, Tausch.
Oederi, Ehrh.
Hirta, Linn.
Paludosa, Good.

Carex (continued)—
Riparia, Curtis.
Vesicaria, Linn.

GRAMINEÆ.

Phalaris—
Canariensis, Linn.
Paradoxa, Linn.
Arundinacea, Linn.

Anthoxanthum—
Odoratum, Linn.

Alopecurus—
Agrestis, Linn.
Geniculatus, Linn.
Bulbosus, Gouan.
Pratensis, Linn.

Milium—
Effusum, Linn.

Phleum—
Pratense, Linn.
Arenarium, Linn.

Agrostis—
Setacea, Curtis.
Canina, Linn.
Alba, Linn.
Vulgaris, With.

Polypogon—
Monspeliensis, Desf.
Littoralis, Sm.

Calamagrostis—
Epigeios, Roth.

Gastridium—
Lendigerum, Gaud.

Ammophila—
Arundinacea, Host.

Aira—
Caryophyllea, Linn.
Præcox, Linn.

Deschampsia—
Cæspitosa, Beauv.

Holcus—
Mollis, Linn.
Lanatus, Linn.

Trisetum—
Flavescens, Beauv.

Avena—
Pubescens, Huds.
Pratensis, Linn.

Avena (continued)—
Strigosa, Schreb.
Fatua, Linn.
Arrhenatherum—
Avenaceum, Beauv.
Sieglingia—
Decumbens, Bernh.
Phragmites—
Communis, Trin.
Cynosurus—
Cristatus, Linn.
Koeleria—
Cristata, Pers.
Molinia—
Cœrulea, Moench.
Catabrosa—
Aquatica, Beauv.
Melica—
Uniflora, Retz.
Dactylis—
Glomerata, Linn.
Briza—
Media, Linn.
Minor, Linn.
Poa—
Annua, Linn.
Pratensis, Linn.
Trivialis, Linn.
Glyceria—
Fluitans, R. Br.
Plicata, Fr.
b. Pedicillata, Towns.
Maritima, Wahl.
Distans, Wahl.
Borreri, Bab.
Festuca—
Rigida, Kunth.
Loliacea, Huds.
Uniglumis, Soland.
Ambigua, Le Gall.
Myurus, Linn.
Sciuroides, Roth.
Ovina, Linn.
Glauca, Sm. ?
Rubra, Linn.
b. Arenaria, Osb.
Elatior, Linn.

Festuca (continued)—
Arundinacea, Schreb.
Bromus—
Asper, Murr.
Sterilis, Linn.
Commutatus, Schrad.
Mollis, Linn.
Brachypodium—
Sylvaticum, Roem. & Schult.
Pinnatum, Beauv.
Lolium—
Perenne, Linn.
Temulentum, Linn.
Agropyron—
Caninum, Beauv.
Repens, Beauv.
Pungens, Roem. & Schult.
Acutum, non R. & S.
Junceum, Beauv.
Lepturus—
Filiformis, Trin.
Nardus—
Stricta, Linn.
Hordeum—
Pratense, Huds.
Murinum, Linn.

FILICES.

Pteris—
Aquilina, Linn.
Lomaria—
Spicant, Desv.
Asplenium—
Adiantum-nigrum, Linn.
Marinum, Linn.
Trichomanes, Linn.
Ruta-muraria, Linn.
Athyrium—
Filix-fœmina, Roth.
Scolopendrium—
Vulgare, Symons.
Cystopteris—
Fragilis, Bernh.
Polystichum—
Lobatum, Presl.
a. Genuinum, Syme.
Angulare, Presl.
Lastræa—
Filix-mas, Presl.

Lastræa (continued)—
Spinulosa, Presl.
Dilatata, Presl.
Polypodium—
Vulgare, Linn.
Osmunda—
Regalis, Linn.

EQUISETACEÆ.

Equisetum—
Maximum, Lam.
Arvense, Linn.
Palustre, Linn.
Limosum, Sm.

LYCOPODIACEÆ.

Lycopodium—
Inundatum, Linn.

CHARACEÆ.

Chara—
Aspera, Willd.
Baltica, Bruzel.
Contraria, Kuetz.
Vulgaris, Linn.
Canescens, Loisel.
Nitella—
Translucens, Agardh.

ENTOMOLOGY.

FOR the benefit of Entomologists visiting Swanage, we add the following list of the Macro-Lepidoptera captured in the district, which has been compiled by Eustace R. Bankes, M.A., F.E.S., and Herbert Goss, F.L.S. Many young people, of both sexes, when at the seaside, find pleasure in making collections of Butterflies and Moths. In the following list will be found many beautiful specimens; we are sorry our space will not admit giving illustrations of some of the more rare ones, but we hope to do so in a future edition so as to make it more intelligible to the unlearned.

DIURNI.

PIERIDÆ

PIERIS, *Sk.*
Brassicæ, *L.*
Rapæ, *L.*
Napi, *L.*

ANTHOCHARIS, *B.*
Cardamines, *L.*

RHODOCERIDÆ

GONOPTERYX, *L.*
Rhamni, *L.*

COLIAS, *F.*
Edusa, *F.*
Hyale, *L.*

VANESSIDÆ

ARGYNNIS, *F.*
Paphia, *L.*
Aglaia, *L.*
Latona, *L.*
Euphrosyne, *L.*

VANESSA, *F.*
Urticæ, *L.*
Polychloros, *L.*
Io, *L.*
Atalanta, *L.*
Cardui, *L.*

NYMPHALIDÆ

LIMENITIS, *F.*
Sibylla, *L.*

DANAIDÆ

ANOSIA, *L.*
Plexippus, *L.*

SATYRIDÆ

ARGE, *B.*
Galatea, *L.*
SATYRUS, *F.*
Ægeria, *L.*
Megæra, *L.*
Semele, *L.*
Ianira, *L.*
Tithonus, *O.*
Hyperanthus, *L.*

CŒNONYMPHA, *H.S.*
Pamphilus, *L.*

LYCÆNIDÆ

THECLA, *F.*
Rubi, *L.*
Quercus, *L.*

POLYOMMATUS, *Lt.*
Phlœas, *L.*

LYCÆNA, *F.*
Ægon, *S.V.*
Agestis, *S.V.*

Alexis, *S.V.*
Adonis, *S.V.*
Corydon, *S.*
Alsus, *S.V.*
Argiolus, *L.*

HESPERIDÆ

SYRICHTHUS, *B.*
Alveolus, *H.*

THANAOS, *B.*
Tages, *L.*

HESPERIA, *B.*
Sylvanus, *E.*
Linea, *S.V.*
Actæon, *E.*

NOCTURNI.

SPHINGIDÆ

SMERINTHUS, *O.*
Ocellatus, *L.*
Populi, *L.*

ACHERONTIA, *O.*
Atropos, *L.*

SPHINX, *O.*
Convolvuli, *L.*
Ligustri, *L.*

CHÆROCAMPA, *D.*
Celerio, *L.*
Porcellus, *L.*
Elpenor, *L.*

MACROGLOSSA, *O*
Stellatarum, *L.*
Fuciformis, *L.*

SESIDÆ

SESIA, *F.*
Ichneumoniformis, *F.*
Tipuliformis, *L.*
Bembeciformis, *H.*

ZENZERIDÆ

COSSUS, *F.*
Ligniperda, *F.*

HEPIALIDÆ

HEPIALUS, *F.*
Hectus, *L.*
Lupulinus, *L.*
Sylvinus, *L.*
Humuli, *L.*

PROCRIDÆ

PROCRIS, *F.*
Statices, *L.*
Globulariæ, *H.*

ZYGÆNIDÆ

ZYGÆNA, *F.*
Trifolii, *E.*
Filipendulæ, *L.*

NOLIDÆ

NOLA, *Lch.*
Cucullatella, *L.*
Confusalis, *H.S.*

LITHOSIDÆ

NUDARIA, *Ss.*
Senex, *H.*
Mundana, *L.*

CALLIGENIA, *D.*
Miniata, *Forst.*

LITHOSIA, *F.*
Mesomella, *L.*
Aureola, *H.*
Deplana, *E.*
Lurideola, *Tr.*
Complana, *L.*
Griseola, *H.*
Stramineola, *Db.*
Quadra, *L.*
Rubricollis, *L.*

EULEPIA, *C.*
Cribrum, *L.*

EUCHELIDÆ

DEIOPEIA, *Ss.*
Pulchella, *L.*

EUCHELIA, *B.*
Jacobeæ, *L.*

CHELONIDÆ

EUTHEMONIA, *S.*
Russula, *L.*

CHELONIA, *Lt.*
Caia, *L.*
Villica, *L.*

ARCTIA, *B.*
Fuliginosa, *L.*
Mendica, *L.*
Lubricipeda, *L.*
Menthastri, *S.V.*

LIPARIDÆ

LIPARIS, *O.*
Auriflua, *F.*
Salicis, *L.*
Monacha, *L.*

ORGYIA, *O.*
Pudibunda, *L.*
Fascelina, *L.*
Antiqua, *L.*

BOMBYCIDÆ

PŒCILOCAMPA, *Ss.*
Populi, *L*

BOMBYX, *L.*
Neustria, *L.*
Rubi, *L.*
Quercus, *L.*
Trifolii, *S.V.*

ODONESTIS, *Gm.*
Potatoria, *L.*

SATURNIA, *Sk.*
Carpini, *S.V.*

GEOMETRÆ.

URAPTERIDÆ
OURAPTERYX, *Lch.*
Sambucata, *L.*

ENNOMIDÆ
EPIONE, *D.*
Apiciaria, *S.V.*
RUMIA, *D.*
Cratægata, *L.*
METROCAMPA, *Lt.*
Margaritata, *L.*
ELLOPIA, *Ss.*
Fasciaria, *L.*
EURYMENE, *D.*
Dolobraria, *L.*
PERICALLIA, *Ss.*
Syringaria, *L.*
SELENIA, *H.*
Illunaria, *H.*
Illustraria, *H.*
ODONTOPERA, *Ss.*
Bidentata, *L.*
CROCALLIS, *T.*
Elinguaria, *L.*
ENNOMOS, *T.*
Tiliaria, *Bk.*
Angularia, *S.V.*
HIMERA, *D.*
Pennaria, *L.*

AMPHIDASYDÆ
BISTON, *Lch.*
Hirtaria, *L.*

BOARMIDÆ
HEMEROPHILA, *Ss.*
Abruptaria, *Thnb.*
CLEORA, *C.*
Lichenaria, *Hf.*
BOARMIA, *Tr.*
Repandata, *L.*
Var. Conversaria, *Hb.*
Rhomboidaria, *S.V.*
GNOPHOS, *T.*
Obscurata, *S.V.*

GEOMETRIDÆ
PSEUDOTERPNA, *H.S.*
Cytisaria, *S.V.*
GEOMETRA, *B*
Papilionaria, *L.*
IODIS, *H.*
Vernaria, *L.*
Lactearia *L.*
HEMITHEA, *D.*
Thymiaria, *L.*

EPHYRIDÆ
EPHYRA, *D.*
Porata, *F.*
Trilinearia, *Bk.*
Omicronaria, *S.V.*
Orbicularia, *H.*

ACIDALIDÆ
ASTHENA, *H.*
Luteata, *S.V.*
Candidata, *S.V.*
ACIDALIA, *T.*
Scutulata, *S.V.*
Bisetata, *Hf.*
Dilutaria, *H.*
Incanaria, *H.*
Promutata, *G*
Straminata, *T.*
Subsericeata, *Hw.*
Remutata, *H.*
Imitaria, *H.*
Emutaria, *H.*
Aversata, *L.*
TIMANDRA, *B.*
Amataria, *L.*

CABERIDÆ
CABERA, *Tr.*
Pusaria, *L.*
Exanthemaria, *S.*

MACARIDÆ
MACARIA, *C.*
Alternata, *S.V.*
Notata, *L.*
Liturata, *L.*
HALIA, *D.*
Vauaria, *L.*

FIDONIDÆ
PANAGRA, *G*
Petraria, *H.*
SCODIONA, *B.*
Belgiaria, *H.*
SELIDOSEMA, *H.*
Plumaria, *S.V.*
FIDONIA, *Tr.*
Atomaria, *L.*
ASPILATES, *Tr.*
Piniaria, *L.*
Citraria, *H.*

ZERENIDÆ
ABRAXAS, *Lch.*
Grossulariata, *L.*
LIGDIA, *G.*
Adustata, *S.V.*
LOMASPILIS, *H.*
Marginata, *L.*

LIGIIDÆ
PACHYCNEMIA, *Ss.*
Hippocastanaria, *H.*

HYBERNIIDÆ
HYBERNIA, *Lt*
Rupicapraria, *S.V.*
Leucophæaria, *S.V.*
Progemmaria, *H.*
Defoliaria, *L.*
ANISOPTERYX, *Ss.*
Æscularia, *S.V.*

LARENTIIDÆ
CHEIMATOBIA, *Ss.*
Brumata, *L.*
OPORABIA, *Ss.*
Dilutata, *S.V.*
LARENTIA, *Tr.*
Didymata, *L.*
Multistrigaria, *Hw.*
Pectinitaria, *Fu.*

EMMELESIA, *Ss.*
Affinitata, *Ss.*
Alchemillata, *L.*
Decolorata, *H.*
Unifasciata, *H.*
EUPITHECIA, *C.*
Venosata, *F.*
Pulchellata, *Ss.*
Centaureata, *S.V.*
Subfulvata, *Hw.*
Isogrammata, *Tr.*
Castigata, *H.*
Albipunctata, *Hw.*
Indigata, *H.*
Constrictata, *G.*
Nanata, *H.*
Subnotata, *H.*
Vulgata, *Hw.*
Absynthiata, *L.*
Minutata, *G.*
Tenuiata, *H.*
Subciliata, *G.*
Dodoneata, *G.*
Abbreviata, *Ss.*
Exiguata, *H.*
Sobrinata, *H.*
Pumilata, *H.*
Coronata, *H.*
Rectangulata, *L.*
LOBOPHORA, *C.*
Sexalata, *H.*
Viretata, *H.*
Lobulata, *H.*
THERA, *Ss.*
Variata, *S.V.*
YPSIPETES, *Ss.*
Ruberata, *Frr.*
Impluviata, *S.V.*
Elutata, *H.*
MELANTHIA, *D.*
Rubiginata, *S.V.*
Ocellata, *L.*
MELANIPPE, *D.*
Procellata, *S.V.*
Unangulata, *Hw.*
Rivata, *H.*
Sociata, *Bk.*
Montanata, *S.V.*
Galiata, *S.V.*
Fluctuata, *L.*
ANTICLEA, *Ss.*
Rubidata, *S.V.*
Badiata, *S.V.*
Derivata, *S.V.*
COREMIA, *G.*
Propugnata, *S.V.*
Ferrugata, *L.*
Unidentaria, *Hw.*
CAMPTOGRAMMA, *Ss.*
Bilineata, *L.*
Fluviata, *H.*
PHIBALAPTERYX, *Ss.*
Tersata, *S.V*
Lignata, *H.*
SCOTOSIA, *Ss.*
Dubitata, *L.*
Undulata, *L.*
CIDARIA, *Tr.*
Psittacata, *S.V.*
Miata, *L.*
Picata, *H.*
Corylata, *Thnb.*
Russata, *S.V.*
Suffumata, *S.V.*
Prunata, *L*
Testata, *L.*
Populata, *S.V.*
Fulvata, *Fors.*
Pyraliata, *S.V.*
Dotata, *L.*
PELURGA, *H.*
Comitata, *L.*

EUBOLIDÆ

EUBOLIA, *D.*
Cervinaria, *S.V.*
Mensuraria, *S.V.*
Palumbaria, *S.V.*
Bipunctaria, *S.V.*
ANAITIS, *B.*
Plagiata, *L.*

SIONIDÆ

TANAGRA, *D.*
Chærophyllata, *L.*

DREPANULÆ.

DREPANLULIDÆ
PLATYPTERYX, *Ls.*
Lacertula, *H.*
Falcula, *S.V.*
CILIX, *Lch.*
Spinula, *S.V.*

PSEUDO-BOMBYCES.

DICRANURIDÆ
DICRANURA, *Lt.*
Furcula, *L.*
Bifida, *H.*
Vinula, *L.*
PETASIA, *Ss.*
Cassinea, *F.*

PYGÆRIDÆ
PYGÆRA, *O.*
Bucephala, *L.*
CLOSTERA, *Ss.*
Reclusa, *S.V*

NOTODONTIDÆ
PTILODONTIS, *Ss.*
Palpina, *L.*
NOTODONTA, *O.*
Camelina, *L.*
Dictæa, *L.*
Dictæoides, *E.*
Ziczac, *L.*

NOCTUÆ.

NOCTUO-BOMBYCIDÆ

THYATIRA, *O.*
Derasa, *L.*
Batis, *L.*

CYMATOPHORA, *Tr.*
Duplaris, *L.*
Flavicornis, *L.*

BRYOPHILIDÆ

BRYOPHILA, *Tr.*
Glandifera, *S.V.*
Perla, *S.V.*
Algæ, *F.*

BOMBYCOIDÆ

ACRONYCTA, *Tr.*
Tridens, *S.V.*
Psi, *L.*
Aceris, *L.*
Megacephala, *S.V.*
Ligustri, *S.V.*
Rumicis, *L.*

LEUCANIDÆ

LEUCANIA, *Tr.*
Conigera, *S.V.*
Lithargyria, *E.*
Littoralis, *C.*
Pudorina, *S.V.*
Comma, *L.*
Impura, *H.*
Pallens, *L.*

NONAGRIA, *O.*
Despecta, *Tr.*
Lutosa, *H.*

APAMIDÆ

GORTYNA, *O.*
Flavago, *S.V.*

HYDRÆCIA, *G.*
Nictitans, *L.*

AXYLIA, *H.*
Putris, *L.*

XYLOPHASIA, *Ss.*
Rurea, *F.*
Lithoxylea, *S.V.*
Sublustris, *E.*
Polyodon, *L.*
Hepatica, *Clk.*

DIPTERYGIA, *Ss.*
Pinastri, *L.*

LAPHYGMA, *G.*
Exigua, *H.*

HELIOPHOBUS, *B.*
Popularis, *F.*
Hispida, *H.*

CERIGO, *Ss.*
Cytherea, *F.*

LUPERINA, *B.*
Testacea, *S.V.*
Cespitis, *S.V.*

MAMESTRA, *O.*
Anceps, *H.*
Albicolon, *H.*
Brassicæ, *L.*

APAMEA, *O.*
Basilinea, *S.V.*
Gemina, *H.*
Oculea, *F.*

MIANA, *Ss.*
Strigilis, *L.*
Fasciuncula, *Hw.*
Literosa, *Hw.*

CARADRINIDÆ

GRAMMESIA, *Ss.*
Trilinea, *S.V.*
Var. Bilinea, *Hb.*

CARADRINA, *Tr.*
Morpheus, *Hf.*
Blanda, *S.V.*
Cubicularis, *S.V.*

NOCTUIDÆ

RUSINA, *Ss.*
Tenebrosa, *H.*

AGROTIS, *O.*
Valligera, *S.V.*
Puta, *H.*
Suffusa, *S.V.*
Saucia, *H.*
Segetum, *S.V.*
Lunigera, *Ss.*
Exclamationis, *L.*
Corticea, *S.V.*
Ripæ, *H.*
Nigricans, *L.*
Tritici, *L.*
Agathina, *D.*
Porphyrea, *S.V.*
Præcox, *L.*
Pyrophila, *S.V.*
Lucernea, *L.*

TRIPHÆNA, *O.*
Ianthina, *S.V.*
Fimbria, *L.*
Interjecta, *H.*
Subsequa, *S.V.*
Orbona, *Hf.*
Pronuba *L.*

NOCTUA, *L.*
Glareosa, *E.*
Plecta, *L.*
C.-Nigrum, *L.*
Triangulum, *Hf.*
Brunnea, *S.V.*
Festiva, *S.V.*
Rubi, *V.*
Xanthographa, *S.V.*

ORTHOSIDÆ

TRACHEA, *H.*
Piniperda, *P.*

TÆNIOCAMPA, *G.*
Gothica, *L.*
Rubricosa, *S.V.*
Instabilis, *S.V.*
Populeti, *F.*
Stabilis, *S.V.*
Gracilis, *S.V.*
Miniosa, *S.V.*
Munda, *S.V.*
Cruda, *S.V.*

ORTHOSIA, *Tr.*
Lota, *L.*

Macilenta, *H.*
ANCHOCELIS, *G.*
Rufina, *L.*
Pistacina, *S.V.*
Lunosa, *Hw.*
CERASTIS, *O.*
Vaccinii, *L.*
Spadicea, *G.*
SCOPELOSOMA, *C.*
Satellitia, *L.*
DASYCAMPA, *G.*
Rubiginea, *S.V.*
XANTHIA, *O.*
Citrago, *L.*
Cerago, *S.V.*
Silago, *H.*
Ferruginea, *S.V.*
COSMIDÆ
TETHEA, *O.*
Subtusa, *S.V.*
COSMIA, *O.*
Trapezina, *L.*
Affinis, *L.*
HADENIDÆ
EREMOBIA, *Ss.*
Ochroleuca, *S.V.*
DIANTHÆCIA, *B.*
Capsincola, *S.V.*
HECATERA, *G.*
Serena, *S.V.*
EPUNDA, *D.*
Nigra, *Hw.*
Viminalis, *F.*
MISELIA, *Ss.*
Oxyacanthæ, *L.*

AGRIOPIS, *B.*
Aprilina, *L.*
PHLOGOPHORA, *O.*
Meticulosa, *L.*
EUPLEXIA, *Ss.*
Lucipara, *L.*
APLECTA, *G.*
Herbida, *S.V.*
Nebulosa, *Hf.*
HADENA, *O.*
Dentina, *S.V.*
Chenopodii, *S.V.*
Oleracea, *L.*
Pisi, *L.*
Thalassina, *Bk.*
Contigua, *S.V.*
XYLINIDÆ
XYLOCAMPA, *G.*
Lithoriza, *Bk.*
CALOCAMPA, *Ss.*
Vetusta, *H.*
Exoleta, *L.*
XYLINA, *Tr.*
Petrificata, *S.V.*
CUCULLIA, *Sk.*
Verbasci, *L.*
Umbratica, *L.*
HELIOTHIDÆ
HELIOTHIS, *O.*
Marginata, *F.*
Peltigera, *S.V*
ANARTA, *Tr.*
Myrtilli, *L.*
HELIODES, *G.*
Arbuti, *F.*

ANTHOPHILIDÆ
HYDRELIA, *G.*
Unca, *S.V.*
MICRA, *G.*
Ostrina, *H.*
PLUSIDÆ
ABROSTOLA, *O.*
URTICÆ, *H.*
Triplasia, *L.*
PLUSIA, *Tr.*
Chrysitis, *L.*
Iota, *L.*
V. Aureum, *G.*
Gamma, *L.*
Ni, *H.*
GONOPTERIDÆ
GONOPTERA, *Lt.*
Libatrix, *L.*
INTRUSÆ
AMPHIPYRA, *Tr.*
Tragopogonis, *L.*
MANIA, *Tr.*
Typica, *L.*
Maura, *L.*
TOXOCAMPIDÆ
TOXOCAMPA, *G.*
Pastinum, *Tr.*
LIMBATÆ
CATOCALA, *O.*
Nupta, *L.*
SERPENTINÆ
EUCLIDIA, *Tr.*
Mi, *L.*
PHYTOMETRA, *Hw.*
Ænea, *S.V.*

DELTOIDES.

HYPENIDÆ
HYPENA, *Tr.*
Proboscidalis, *L.*
Rostralis, *L.*
HYPENIDES, *G.*
Costæstrigalis, *Ss.*

SCHRANKIA, *H.S.*
Turfosalis, *Wk.*
HERMINIDÆ
RIVULA, *G.*
Sericealis, *S.*

HERMINIA, *Tr.*
Barbalis, *L.*
Tarsipennalis, *Tr.*
Grisealis, *S.V*

AVENTIÆ.

AVENTIDÆ
AVENTIA, *D.*
Flexula, *F*

CONCLUSION.

IT may be asked why Swanage, with the many advantages set forth in the preceding pages, has not been more prominently before the public. The reply is not easy. Probably selfishness is the reason, for there are many people in the world who still believe that their very superior lungs ought not to breathe in the same atmosphere as common mortals who have not been rocked in the cradle of caste, idleness, and luxury. Such people, if disposed, can generally throw sufficient obstacles without appearing to do so, to prevent the growth of the most favoured spots—railways can be manipulated to give places a wide berth. Though Swanage has not been visited by the crowd, neither has the great god *Demos* set up his sway here, it has long been a favourite resort with lawyers, artists, and literary men; and the great apostle of muscular Christianity, Canon Kingsley, visited it in the last generation. This keen critic highly eulogized the place. To have found favour with the patron of Westward Ho!—a place on the north-west coast of Devon, where the sun can only shine nine months in the year, owing to the height of the cliffs—is something to be proud of. Westward Ho! has little to recommend it beyond the exhilarating climate, and for this reason a college has been established there for hardening boys intended to battle with the treacherous climate of our Eastern Empire in after-life. As Swanage comes up to the Kingsley standard of what a healthy and exhilarating watering-place should be, and with the addition of having a sunny aspect and of being a hundred miles nearer to London, there is no doubt in time schools will be established there—which is by no means a bad feature of a health resort. Church matters in Swanage would bear a little life thrown into them, and Mr. Burt does not

intend that this shall be long wanting. He has set apart an admirable site for a second church. For an energetic clergyman, with a fair knowledge of the world and things worldly, we know of no more promising field, and one more likely to yield good results. For what is called society the town is too small to be severed from the county, and a residence here would not exclude from the claims to be considered part of the fashionable world for which Dorsetshire is famous. Swanage has a few notable personages resident within her narrow boundaries, among whom may be mentioned Mr. Palgrave, the Clerk to the House of Commons, and Sir Charles Robinson, Her Majesty's Director of Pictures. Lord Eldon owns property in the town, and has a residence a short distance off at Kingston, to which village lovers of ecclesiastical art and architecture should make a pilgrimage, for here the great architect Street has left us one of his masterpieces. Far from the crowded haunts of men, with unlimited means at his command, his characteristic feeling and talent had full play, and in the result we have a perfect gem. The church is built close to the quarries of the far-famed Purbeck marble; and, report states, cost £60,000, though it will barely accommodate three hundred people. If any fault can be found, it is that the tower is too large for so small a church. The arcades between the nave and aisles have continuously treated clerestory with lancet-like openings and blank arches between. Purbeck marble has been used profusely throughout, in the clustered piers of the arcades and of the crux in the corbels and string-courses. The chancel and transept are vaulted, and the aisle windows have a rich succession of orders, with detached columns to support them. A number of screens and the pulpit are executed in wrought iron, of excellent design. The church is highly creditable to the character of our English nobility, and worthy of the descendant of a Lord Chancellor of England.

As may be expected, amusements are not provided for in so small a place; but baths and concert rooms are projected, and will be carried out probably at an early date. In the best of all watering places there are days when people require to meet and exchange a little gossip, which tonic is as desirable for building up a constitution as pure air; and our forefathers paid more attention to this matter than we do. Of course, we shall have to wait a long time for the introduction to our watering places of the continental casino, as at Boulogne and Ostend. If carefully managed, we fail

to see the objection to them, and the only arguments we have heard against such establishments for England are the gambling and the *demi-monde*, and our inability to regulate such things. Yet we profess to have laws in force against gambling, but allow the post office to make a large revenue out of stock-exchange gambling and race-course betting; such is morality in England, as to the *demi-monde*, we allow free trade alike in that as we do in importing foreign paupers and revolutionists; in these affairs, the foreigner manages better than we do, but if we made a serious attempt in the direction our ingenuity would succeed in surpassing him. Municipal affairs at Swanage are in a very humble state. It returns one member to the Dorsetshire County Council, in the person of Mr. Burt; and it has a small local board, but too feeble to be taken much notice of by that wonderful body in Whitehall known as the Local Government Board. The time is probably not far distant when the town will be incorporated under commissioners, which, if they succeed in getting a decent charter, would be the best thing that could happen to the place. From our carefully drawn map of the district there will be no difficulty in selecting walks; and it may be useful if we append a few of the distances for walks and excursions by land and sea. Steamers of considerable size ply daily at frequent intervals between Swanage and Bournemouth during the summer months, and to numerous other places in the Channel.

Towns and Villages.	Miles by water.	Miles by land.
Agglestone	—	3½
Alum Bay	17	—
Bournemouth	8	24
Branksea Island	7	—
Chapman's Pool	8	5
Christchurch	—	29
Church Knowle	—	7½
Corfe Castle *viâ* Kingston	—	7
Corfe Castle *viâ* Valley Road	—	6
Cowes	27½	—
Encombe	9	6½
Freshwater	19	—
Godlingston	—	2
Grange	—	9½

Towns and Villages.	Miles by water.	Miles by land.
Handfast Point (Old Harry)	3	4
Herston	—	1
Kimmeridge	12	9
Kingston	—	5
Langton	—	2½
Little Sea	5	4½
Lulworth Cove	15½	16
Lymington	23	43
Needles	16	—
Nine Barrow Down	—	3
Parkstone	9½	21
Poole	9	20
Portland	23½	33
Portsmouth	36	—
Punfield Cove	1½	1½
Redhorn	8½	5
Rempstone	—	4½
St. Alban's Head	7	5½
Seacombe (Dancing Ledge)	4½	3
Southampton	40	50
South Haven	6	6
Steeple	—	9½
Stowborough	—	9½
Studland	4	3
Tilly Whim	2	1¼
Tyneham	—	11
Ulwell	—	2
Ventnor	28	—
Wareham	—	10½
Weymouth	23½	28½
Whitecliff	—	2
Winspit	5½	4½
Worth	—	4
Worthbarrow	13	13
Wych	11½	7

There are many places and things in the neighbourhood of Swanage to interest the curious. At Wimborne, in the fine old church with the twin towers, may be seen the chained Bible and other books. The admirers of Browning will be interested to know that a near ancestor of the poet held the useful, though not very poetic, office of butler in the historic Bankes family at Corfe Castle.

APPENDIXES.

I.

LIST OF THE PRINCIPAL WORKS ON THE GEOLOGY OF SWANAGE AND ITS NEIGHBOURHOOD.

ENGLEFIELD, SIR H. C.: A Description of . . . the Isle of Wight, with Additional Observations on the Strata of the Island, and their Continuation in the Adjacent Parts of Dorsetshire. By Thomas Webster. Fol. London. [1816

WEBSTER, THOMAS: Observations on the Purbeck and Portland Beds. *Trans. Geol. Soc.*, Ser. 2, vol. ii., pp. 37-44. [1826

FITTON, DR. W. H.: Observations on Some of the Strata between the Chalk and the Oxford Oolite in the South-East of England. *Trans. Geol. Soc.*, Ser. 2, vol. iv., pp. 206-17, 228-32. [1836

CLARKE, REV. W. B.: Illustrations of the Geology of the South-East of Dorsetshire. *Mag. Nat. Hist.*, New Ser., vol. i., pp. 414-21; vol. ii., pp. 79-88, 128-36, 461-69; vol. iii., pp. 390-401, 432-38, 483-89. [1837-39

FORBES, PROF. E.: On the Succession of Strata and Distribution of Organic Remains in the Dorsetshire Purbecks. *Report* Brit. Assoc., for 1850, Trans. of Sections, pp. 79-81; and *Edin. Phil. Journ.*, vol. xlix., pp. 311-13, 391. [1851

AUSTEN, REV. J. H.: A Guide to the Geology of the Isle of Purbeck, and the South-West Coast of Hampshire. 8vo. Blandford. [1852

BRODIE, REV. P. B.: On the Insect Beds of the Purbeck Formation in Wiltshire and Dorsetshire. *Quart. Journ. Geol. Soc.*, vol. x., pp. 475-82. [1854

MANTELL, DR. G. A.: Geological Excursions round the Isle of

Wight, and along the Adjacent Coast of Dorsetshire. Edit. 3. 8vo. London. [1854

BRISTOW, H. W.: Sheet 16 of the Geological Survey Map (The Isle of Purbeck, etc.) [1855

FISHER, REV. O.: On the Purbeck Strata of Dorsetshire. *Trans. Cambridge Phil. Soc.*, vol. ix., pp. 555-81. [1856

BRISTOW, H. W.: Comparative Sections of the Purbeck Strata of Dorset. Vertical Sections, Sheet 22, Geol. Survey. [1857

BRISTOW, H. W.: Sections to Illustrate the Geology of the Isle of Purbeck. Horizontal Sections, Sheet 56, Geol. Survey. [1859

JUDD, PROF. J. W.: On the Punfield Formation. *Quart. Journ. Geol. Soc.*, vol. xxvii., pp. 207-26. [1871

WHITAKER, W.: On the Chalk of the Southern Part of Dorset and Devon. *Quart. Journ. Geol. Soc.*, vol. xxvii., pp. 93-100. [1871

MEYER, C. J. A.: On the Wealden as a Fluvio-lacustrine Formation, and on the Relation of the So-called "Punfield Formation" to the Wealden and Neocomian. *Quart. Journ. Geol. Soc.*, vol. xxviii., pp. 243-53. [1872

MANSEL-PLEYDELL, J. C.: A Brief Memoir on the Geology of Dorset. *Geol. Mag.*, vol. x., pp. 402-13; 438-47. [1873

MEYER, C. J. A.: Further Notes on the Punfield Section. *Quart. Journ. Geol. Soc.*, vol. xxix., pp. 70-75. [1873

BLAKE, PROF. J. F.: On the Kimmeridge Clay of England. *Quart. Journ. Geol. Soc.*, vol. xxxi., pp. 196-232. [1875

BRODIE, W. R.: Notes on the Kimmeridge Clay of the Isle of Purbeck. *Proc. Geol. Assoc.*, vol. iv., pp. 517, 518. [1876

FORDHAM, H. G.: On the Section of the Chloritic Marl and Upper Greensand on the Northern Side of Swanage Bay, Dorset. *Proc. Geol. Assoc.*, vol. iv., pp. 506-16. [1876

GARDNER, J. S.: On the Lower Bagshot Beds of the Hampshire Basin. *Proc. Geol. Assoc.*, vol. v., pp. 51-68. [1877

BLAKE, PROF. J. F.: On the Portland Rocks of England. *Quart. Journ. Geol. Soc.*, vol. xxxvi., pp. 189-235. [1880

HUDLESTON, W. H.: Excursion to the Isle of Purbeck. *Proc. Geol. Assoc.*, vol. vii., pp. 377-90. [1882

DAMON, R.: Geology of Weymouth, Portland, and Coast of Dorsetshire, from Swanage to Bridport-on-the-Sea. 8vo. Weymouth. Edit. 2. [1884

JONES, PROF. T. R.: On the Ostracoda of the Purbeck Formation; with Notes on the Wealden Species. *Quart. Journ. Geol. Soc.*, vol. xli., pp. 311-52. [1885

GREEN, BURTON: Kimmeridge Shale: its Origin, History, and Uses. 8vo. London. [1886

MANSEL-PLEYDELL, J. C.: Fossil Reptiles of Dorset. *Proc. Dorset Nat. Hist. and Antiq. Field Club*, vol. ix., pp. 1-40. [1888

BRISTOW, H. W.: The Geology of the Isle of Wight. Second Edition revised and enlarged by CLEMENT REID and AUBREY STRAHAN. [Notes on the Strata at Punfield, by A. Strahan.] Geol. Survey Memoir. 8vo. London. [1889

II.

TIDES IN SWANAGE AND DURLSTON BAYS.

1. Flood-tide runs to the east. Ebb-tide to the west.

2. It is high water by the shore at the full and new moon (about) 8.30, but within a mile of Durlston Head the Flood-tide continues to run east until (about) 10 o'clock.

3. The tide ebbs two hours, then flows two hours, making a second high water which at neap-tides is often higher than the first. It then ebbs again two hours, making low water twenty-four minutes later each ebb-tide. This, although it may be varied by the influences of the wind, etc., is always correct at the changes of the moon.

4. The rise of spring-tide is (about) six and a half feet, and neap-tides about four—sometimes not more than two feet.

5. The highest tide is about the third after the change of the moon.

6. Several hours before high and low water the tide runs in a contrary direction close in shore.

III.

HOW TO REACH SWANAGE and the cost thereof will be found useful to our readers we have no doubt. Visitors from London should avoid the long and tedious route *viâ* Chippenham and Dorchester, by the Great Western Railway; but residents in Berks, Oxford, and Wilts will find two convenient branch lines running out of the Great Western Railway main line—that *viâ* Didcot and Newbury, joining the London and South-Western at Winchester and on to Swanage; or *viâ* Swindon, Andover, and Salisbury: this branch is convenient for Gloucestershire. For travellers from Birmingham, and North and North-west thereof, the most direct and inexpensive route is by the Midland Railway *viâ* Bath, Templecombe, and Broadstone Junction; and from there by a short branch line from Poole Harbour and Wareham a few miles takes the visitor to Swanage.

From the Eastern Counties and East Coast of England, and Scotland, visitors will probably find the most direct route to be through London. Waterloo Station is now in direct communication with St. Pancras, Liverpool Street and King's Cross Stations; but those travelling from the North by the London and North-Western Railway can change at Willesden Junction; and, by the Great Western Railway at Westbourne Park Station, and *viâ* the West London Extension by Addison Road to Clapham Junction, join the London and South-Western Railway to Swanage without entering London. Railway omnibuses take passengers, free of charge, from Euston and St. Pancras Stations to Waterloo.

We append a few of the principal towns and cost of tourist tickets, 1st and 3rd, to and from Swanage. As time tables are constantly changing visitors must find out the times of the starting of trains from the various published tables.

As Swanage becomes more in request by London business men good terms will, no doubt, be made by the London and South-Western Railway for season tickets.

Most of the tourist tickets are available for two months, and some for longer periods.

Long-distance travellers, holding tourists' tickets, on their way to the West of England and Channel Islands, can break their journey at Swanage.

TOWNS ON THE MIDLAND RAILWAY.

Towns.	1st Class.		3rd Class.	
	s.	*d.*	*s.*	*d.*
Ashton - - -	75	4	37	6
Barnsley - -	78	8	40	6
Basford - -	67	2	34	6
Bath - - -	26	4	12	6
Bedford - -	53	2	29	0
Birmingham - -	52	4	27	0
Blackburn - -	79	10	40	6
Bolton - -	77	7	38	6
Bradford - -	81	2	42	0
Bristol - - -	30	1	13	3
Burton - - -	60	10	31	0
Buxton - - -	73	2	37	0
Carlisle - -	105	8	53	6
Cheltenham - -	39	4	20	7
Chester - -	72	7	35	0
Chesterfield - -	70	0	36	0
Clifton Down - -	30	1	13	3
Colne - - -	86	8	42	6
Derby - - -	63	8	32	6
Dewsbury - -	81	2	42	0
Didsbury - -	75	10	37	0
Edinburgh - -	130	0	65	0
Evesham - -	44	2	23	6
Gloucester - -	37	8	19	6
Great Malvern -	44	10	22	6
Halifax (L. & Y.) -	81	2	42	0
Huddersfield (L. & Y.)	78	2	40	0
Hull (N. E. or H. & B.)	89	4	46	6
Ilkeston - -	85	0	43	0
Ingleton - -	90	10	44	6
Keighley, Ingrow -	85	6	42	0
Kettering - -	55	1	30	0
Lancaster - -	88	2	43	6
Leeds - - -	81	2	42	0
Leicester - -	57	10	31	0
Lincoln - -	75	10	39	6
Liverpool - -	76	10	37	6
Loughborough - -	61	4	32	6
Luton - - -	47	0	26	6
Manchester - -	75	10	37	0
Mansfield - -	70	8	36	6
Malvern - -	41	0	21	3

MIDLAND RAILWAY (*continued*).

Towns.	1st Class.		3rd Class.	
	s.	*d.*	*s.*	*d.*
Market Harborough -	57	10	31	0
Masborough - -	74	2	38	0
Melton Mowbray -	64	7	34	6
Montpelier - -	30	1	13	3
Morecambe - -	88	2	43	6
Nailsworth - -	36	8	18	3
Newark - -	71	8	37	0
Normanton - -	80	6	40	6
Northampton - -	55	1	29	3
Nottingham - -	67	2	34	6
Oakham - -	63	0	31	0
Rotherham - -	74	6	38	0
Sheffield - -	73	6	38	0
Shipley - -	81	2	42	0
Skipton - -	86	8	42	6
Southport - -	80	4	39	6
Southwell - -	71	8	37	0
St. Albans - -	45	4	25	0
Stalybridge - -	75	6	37	6
Stockport (Teviot Dale)	73	4	36	0
Stonehouse - -	35	0	17	11
Stroud - - -	32	0	16	10
Tamworth - -	57	4	29	6
Tewkesbury - -	41	8	21	0
Trent - - -	66	4	34	0
Wakefield - -	79	8	40	6
Walsall - -	54	0	28	0
Warrington (Central) -	73	4	36	0
Wellingborough -	55	1	29	3
Withington - - -	75	10	37	0
Wolverhampton -	55	7	28	0
Worcester - -	45	0	23	0
York - - -	84	6	44	0

TOWNS ON THE NORTH-EASTERN RAILWAY.

Bishop Auckland -	99	6	52	0
Blyth - - -	112	0	58	6
Castleford, *vid* Normanton - -	81	6	41	0

NORTH-EASTERN RAILWAY (*continued*).

Towns.	1st Class.		3rd Class.	
	s.	*d.*	*s.*	*d.*
Darlington and North Road	96	6	50	6
Durham	101	4	53	6
Hebburn	109	0	56	10
High Shields	109	0	56	10
Hull	89	4	46	6
Middlesborough	98	0	51	6
Newcastle	107	0	56	0
North Shields	109	0	56	10
Redcar	100	2	52	7
Saltburn	101	6	53	3
Scarborough	94	4	50	6
Selby	83	6	43	0
South Shields	109	0	56	10
Thirsk	90	8	47	1
Tynemouth	109	6	57	2
York	84	6	44	0

TOWNS ON THE LONDON AND NORTH-WESTERN RAILWAY.

Alderley Edge	70	1	35	0
Ashton	75	4	37	6
Atherstone	57	4	29	0
Aylesbury	45	0	28	0
Banbury	52	4	25	6
Bangor	90	0	42	6
Batley	81	2	42	0
Bedford	53	2	29	0
Birkenhead	76	10	37	0
Birmingham	52	4	27	0
Blackburn	79	10	40	6
Blaenau Festiniog	91	0	43	0
Bletchley	45	0	24	6
Blisworth	49	6	29	0
Bolton	77	7	38	6
Bradford	81	2	42	0
Buckingham	45	0	20	0
Burton-on-Trent	60	10	31	0
Buxton	73	2	37	0
Cambridge	55	10	29	3
Carlisle	105	8	53	6
Carnarvon	90	4	43	6
Carnforth	90	10	44	0
Chester	72	7	35	0
Chorley (*vid* Wigan)	79	4	40	6
Coventry	52	4	26	0
Crewe	66	4	32	6
Derby	63	8	32	0
Dewsbury	81	2	42	6
Dublin (W.R.), Mail	114	7	—	

LONDON AND NORTH-WESTERN RAILWAY (*continued*).

Towns.	1st Class.		3rd Class.	
	s.	*d.*	*s.*	*d.*
Dublin (North Wall)	109	1	50	2
„ (Kingstown)	111	7	—	
Dudley	54	0	28	0
Dunstable	48	6	27	0
Eccles	73	10	36	6
Halifax	81	2	42	0
Heaton Norris	73	4	36	6
Higham Ferrers	60	0	30	0
Holyhead	88	4	43	0
Huddersfield	78	2	40	0
Kendal	91	8	46	6
Lancaster	88	2	43	6
Leamington, Marton, Warwick (Milverton), Kenilworth	52	4	26	0
Leeds	81	2	42	0
Leicester	57	10	31	0
Leighton	45	0	26	0
Lichfield Junction	57	0	28	0
Liverpool	76	10	37	6
„ (Landing Stage)	76	10	37	6
Loughborough	62	0	32	0
Macclesfield	70	9	35	0
Manchester	75	10	37	0
Market Harborough	57	10	31	0
Melton Mowbray	64	7	34	6
Mold	76	1	37	3
Morecambe	88	2	43	6
Nantwich	66	4	32	6
Newport (Salop)	60	6	29	6
Normanton	80	6	40	6
Northampton	55	1	29	3
Northwich	70	7	34	6
Nottingham	67	2	34	6
Nuneaton	57	8	29	6
Oldham	75	1	38	0
Oswestry	65	0	32	0
Oxford, Bicester	45	10	22	0
Penrith	103	6	51	0
Peterborough	62	6	33	0
Preston	80	6	43	6
Rugby	52	4	26	0
Rugeley Junction	60	4	29	6
Runcorn	72	7	37	0
St. Albans, Watford Junction	45	4	25	0
St. Helens, Prescot	76	4	38	0
Southport & Birkdale	80	4	39	6
Shrewsbury	61	9	29	6
Stafford	60	4	29	7
Stalybridge	75	6	37	6

LONDON AND NORTH-WESTERN RAILWAY (*continued*).

Towns.	1st Class.		3rd Class.	
	s.	*d.*	*s.*	*d.*
Stamford - -	65	0	33	0
Stockport - -	73	4	36	0
Tamworth - -	57	4	29	6
Thrapston - -	57	7	31	0
Wakefield - -	79	8	40	6
Walsall - -	54	0	28	0
Warrington - -	73	4	36	0
Wednesbury - -	54	0	28	0
Wellingborough -	55	1	29	3
Wellington - -	60	6	29	6
Welshpool - -	65	0	31	0
Wigan - - -	76	10	38	0
Wolverhampton -	55	7	28	0

TOWNS ON THE LONDON AND SOUTH-WESTERN RAILWAY.

London Stations -	40	0	21	0
Aldershot - -	35	0	16	6
Andover Junction -	22	3	11	1
Basingstoke - -	29	6	14	0
Bath - - -	26	4	12	6
Eastleigh and Bishopstoke - -	21	0	9	10
Brentford - -	40	0	21	0
Bristol - - -	30	1	13	3
Camberley - -	39	0	18	1
Chertsey - -	40	0	19	6
Crewkerne - -	24	10	11	5

LONDON AND SOUTH-WESTERN RAILWAY (*continued*).

Towns.	1st Class.		3rd Class.	
	s.	*d.*	*s.*	*d.*
Devonport - -	56	4	26	5
Dorchester - -	9	0	4	4
Epsom - - -	40	0	21	0
Exeter - - -	37	4	18	1
Farnham - -	34	6	15	11
Farnborough - -	35	0	16	8
Gosport - -	27	10	12	10
Guildford - -	40	0	19	1
Leatherhead - -	40	0	21	0
Plymouth (North Road) or Mutley - -	56	4	26	5
Portsmouth, Fratton or Southsea - -	28	8	13	9
Richmond - -	40	0	21	0
Salisbury - -	16	10	8	3
Sherborne - -	19	0	9	3
Southampton - -	20	0	9	1
Surbiton - -	40	0	20	5
Tavistock - -	50	5	24	7
Twickenham or Hounslow - - -	40	0	21	0
Walton - -	40	0	19	4
Weybridge - -	40	0	19	0
Weymouth - -	11	0	5	7
Wimbledon - -	40	0	20	1
Winchester - -	23	4	10	11
Windsor, Wraysbury, or Staines - -	40	0	21	0
Woking - -	39	0	18	1
Yeovil - - -	22	4	10	2

The Map issued with this book can be had of our Publisher on stout paper in wrapper to carry in pocket, price 1/-; or mounted on roller for hanging up, 2/-.

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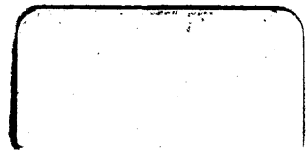

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